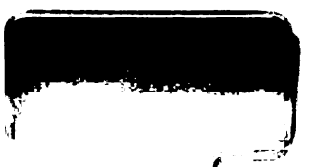

NAUTICAL MAGAZINE

1873.

VOLUME XLII., No. I.

NEW SERIES.

JANUARY.

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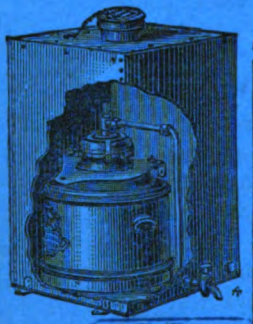

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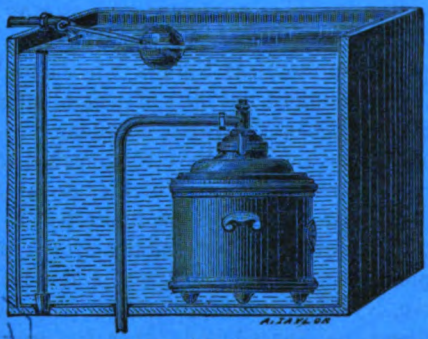

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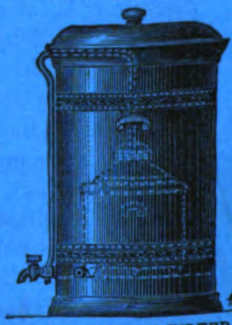

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(1107)

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THE *Nautical Magazine* was launched in the year 1832, and is now, therefore, about to enter on its forty-first year. It was, until two years ago, conducted by Captain Becher, R.N., of the Hydrographic Department of the Admiralty; and the gallant Captain received a yearly stipend for conducting it. It has always contained trustworthy records as to Lighthouses, Buoys, Beacons, New Charts, Alterations in Charts, as well as Hydrographic, and Nautical Notices; but latterly, and until within two years, it has contained but little of general interest.

Under the present management its special information is as certain and trustworthy as before, whilst its pages have been opened so as to include matters, not only of interest to officers of the Royal Navy and the Mercantile Marine, but also to all persons interested in any way in Ships, Seamen, and Commerce. It now contains every month a full list of all Deaths, Appointments, and Promotions in the Royal Navy and Royal Naval Reserve, Nautical and Hydrographic Notices, trustworthy Records of Legal Decisions, Official and Other Inquiries into Wrecks, Rewards Granted by Foreign Governments to British Subjects, and by the British Government to Foreigners for saving life from Sea. Reprints of all Orders and Circulars publicly issued by the Board of Trade and other Departments in any way of value to Masters, Mates, Owners, Agents, and Underwriters.

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A report has, we have just learnt, been spread (*a report likely to damage the reputation of the New Series of the old* NAUTICAL) that it is now nothing more than a mere Official or Semi-Official Organ. As such a report, if entertained by our readers, is certain to act very prejudicially to the New Series, the Editor wishes to take this opportunity of stating emphatically that he repudiates it utterly. The *Nautical* is as inde-

pendent as any other Magazine. It is not in any way, or to any extent whatever, either directly or indirectly, an Official or Semi-Official Organ. The papers it contains are not written to express (and if they do so it is by accident, as they are not intended to express) the views of any Department of the Government.

The *Nautical* does not desire to express the views of one Department or of one set, as such a proceeding would be narrow and fatal; but what it does desire to do, and what it does, is to publish sound papers on all subjects of importance to our Maritime interests; and to *reproduce and carefully arrange*, in a compact form, Legal Decisions, Correspondence, all Official Orders, and Circulars, from time to time issued by the various Public Departments throughout the world that are valuable to those interests.

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NAUTICAL MAGAZINE, 1873.

THE

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FOR 1873.

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A JOURNAL OF PAPERS

ON SUBJECTS CONNECTED WITH

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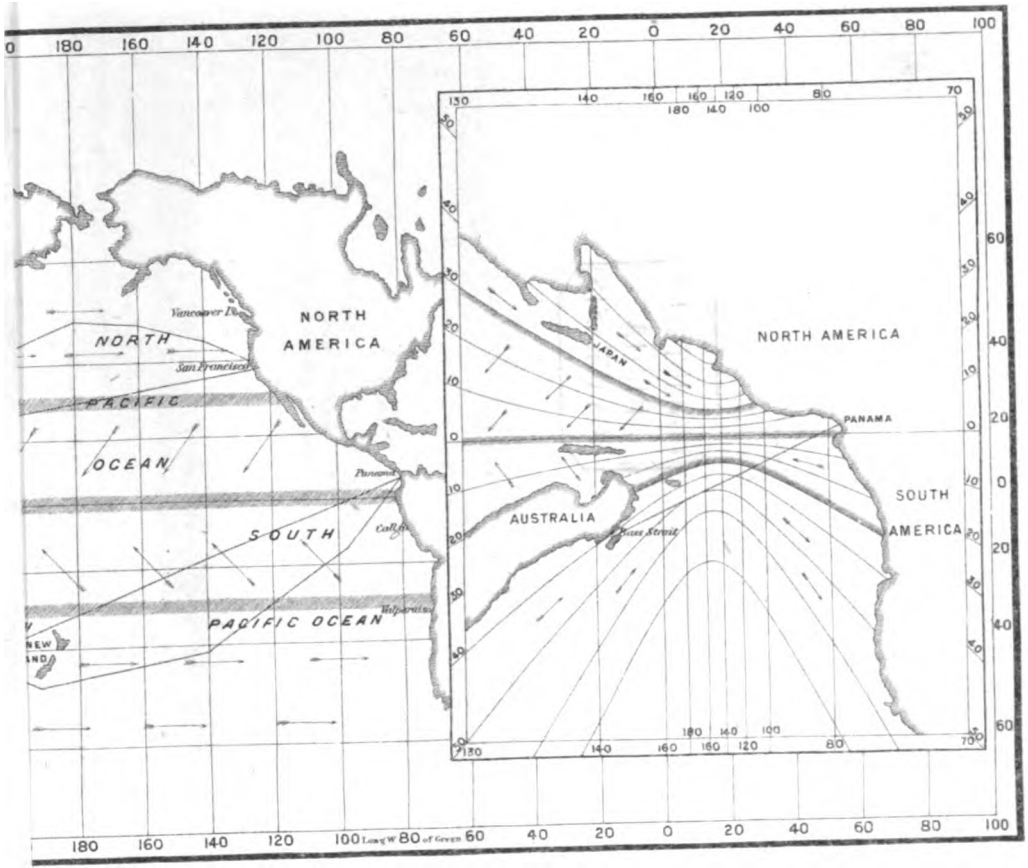

Calm Belts shewn thus *Direction of Wind shewn thus*

THE

NAUTICAL MAGAZINE.

NEW SERIES.

JANUARY, 1873.

SAILORS.

As Britain's commerce depends much on so-called "Poor Jack," let us spend, in opening the New Year, *un petit quart d'heure* in considering the brave fellow and his fortunes.

Twice a day he comes to our ports, guiding monsters of wood and iron on the uprushing flood that pours out of the Atlantic. During his absence, he has given up his personal fancies, his will, almost his individuality, to those of his officers; he has eaten food which, although he had a choice in selecting at the time he signed his agreement, is monotonous in flavour and consistency; he has been lodged in a forecastle, which, although often healthy and comfortable for a sailor, is circumscribed, and, in some cases, a den, little less rude than the wigwam of the red man; his companions have been a miscellaneous crew of several nationalities, mostly good fellows, some few gross at times mixed with several ferocious scoundrels of the type of the pirates and free-booters of other days, all closely cribbed with him, and cabined for the voyage. These latter, mere animals, and of a dangerous kind, often make their finer-bred messmates groan under galling tyrannies; but, appalling indeed is the life poor Jack leads, if one of these sea-brutes should be his officer. Brutality on the part of officers is surely and quickly disappearing; but, in those exceptional cases, when cruelty stands in the shoes of authority; and, uncontrolled in the midst of the watery waste, executes its savage decrees on an inferior, then are consummated the most

barbarous outrages inflicted on man. On shore, the tortured slave can flee on its stable surface; but the bondsman of the deep must endure his wrongs in his floating dungeon, till his agony be terminated in port; or, leap into the fastnesses of the deep, and quench in it, for ever, his burning, outraged heart. It is not, however, of the ill-used sailor that we speak, because his number is, fortunately, small; but of the ordinary sailor, whose treatment is fairly good in most cases, and exceptionally good in many, that we write.

Freed from coercion and the manifold restrictions, which, with the kindest of officers, he must necessarily have endured afloat, Jack leaps ashore, after a long voyage, with that spirit of joyousness all confined things feel when loosed from trammels. The schoolboy from his class, the soldier from his campaign, the sailor from his cruise—all feel alike a buoyancy, a restlessness, a reckless disregard for the conventionalities of sober systematised society. Like unchained dogs, they frisk, shout, and perform fantastic tricks, that amaze, amuse, and disturb those who have never worn the collar themselves.

Of the horde of rascals that are waiting to profit by this exhilaration and make his coveted sojourn on shore as brief as possible, rendering it at length so diabolical that he is forced to take refuge in his forecastle once more—of the touts and crimps—we will say only that their profits and success are, in the United Kingdom, becoming less and less, whilst their detection and punishment here is more certain and speedy every day; although, on the Continent of America, and even within Her Majesty's dominions there, a crimp can, with impunity, in broad daylight, go on board a British ship and shoot people who oppose him. Of the Black-Eyed Susans and Wapping Old Stairs Mollys, whose affections are offered with unselfish impartiality to the whole merchant service, of these remarkable people we will say nothing, except, *en passant*, that, in despite of *The Shield*, and its advocacy of free trade in the most loathsome disease known, we think an extension of certain Acts would be of advantage to them. Jack's uprise in intelligence and fortune comes not from his connection with one or other of these. It is not to the roguery, ignorance, and filth that tend to keep him back; but to the causes that are tending to his participation in the benefits of the age that we wish to invite attention.

These, in brief, are three—The development of steam; the precision of nautical science; the social ideas of the epoch.

The plash of the paddle-wheel smiting the restless waves of the Atlantic, was the knell of old Ocean's supremacy. Hitherto he had played with the bold fellows who slid over his broad back. He had flung them, with baffling wantonness, to all points of the compass, in his merry moods; and when the old god saw that the daring fellows would not be discouraged,

but pushed on presumptuously again and again, he would fascinate them with an enchanted calm, and hold them spell-bound on his sapphire breast, while radiant dolphins mocked them as they frolicked gaily by; or he would raise his brow into terrible furrows, and fling them on to the iron frontiers of his realm, or gulph them into his abyss-throat, never to vex him more. But the steamer changed all that. It beat a tattoo of defiance over the shoulders of the old tyrant, and the long foamy wake it left in its path seemed like an undulating flag of triumph Jack was flinging out behind him. It thundered along, as the old god slumbered in glassy silence, and when he woke raging, it split and shattered the tumbling mountains he uppiled to arrest its amazing flight; it laughingly fled from the winds that roared and plunged about it, answering their dread voices by a hoarse bellow from its funnel, and by flinging in their faces its black and stifling breath—on, on it sped to its appointed haven. The re-action of this wonderful machine upon its human guide and controller was also enormous. The overmastering forces of nature that imperilled him at every hour, and the mocking uncertainty of the phenomena amidst which he laboured, had conspired to keep alive in his breast those ancient superstitions that were dead or expiring on land. Though nominally a Christian, he was practically a Pagan, for he believed that the watery world was the home of impersonated forces, that must be propitiated by acting in consonance with their desires. Thus, Friday was for some mysterious reason, sacred to them. Direct maledictions followed the impious crew who departed into their realm on that day; the titulary "cherub, who sits up aloft," fled in horror from the infamous ship, that henceforth was doomed to disease, disaster, and death. But blessed was the craft that sailed on Sunday, for the Fates loved to hear the hearty "Yo heave ho," and the rattle and clatter of starting on that day; so, amid the quietude of the port, Jack danced gleefully round the capstan, yet with a groggy tear in his eye, as he saw the blowsy outline of his morganatic spouse melt into the crowd of other women waving rum-perfumed blue handkerchiefs. And, when the land was lost, and the routine of ship-life in full swing, and the pure breath of the deep had dissipated the alcoholic fog that had muddled his wits, Jack, purged of all the heresies of the shore, began to think of his duty to Davy Jones—his own particular fetish. For, though called by a so familiar, nay, even a jocular name, Jack believed in him, and feared him, with a reverence few abstractions obtain. The pious Catholic must have some form or similitude of his patron saint to limit and sustain his mind; and Jumbo, in the wilds of negroland, cuts out of a stick his beau-ideal of a good demon; but the sailor has never attempted to put Davy Jones into any form, sculptured or pictorial. The cause for this is to be sought, doubtless, in the vague and shifting appearances that ocean eternally presents.

The vast expanse of sea and sky is too immense for representation, and the protean billows, hurrying by, leave no *individual* impression behind. And Davy's empire was the *bottom* of the sea. There he gathered the remains of dead seamen, and when they had undergone "a sea change," he despatched them on portentous messages to surviving messmates. As mystic lights, they would flit about the ship, or, as weird voices, mutter their terrible communications in the ears of doomed men; occasionally they delivered a general epistle to the whole crew, through the medium of a forecastle seer, who alone could interpret "airy nothings." Ah! never will spiritual *clairvoyants* on shore be so successful as the credulous, child-hearted old salts, who translated the mystic utterances of wild Nature to the passionate, wayward, reverential men before the mast. The steamer destroyed all this *religio-diablerie*. It had no respect for Friday, and snorted defiance at the Fates as it had done at the Ocean. The messengers of Davy Jones found exceeding difficulty in getting on board the marvellous vessel. And, if they did, they found the conditions required for their sybilline confidences were altogether wanting. Gone was the witching quietude of the night watch; no longer the moonlight made marvels in the swollen canvas high up in the air, for the funnel poured out its twisted clouds amid the pale sheets in a very commonplace manner. On dark gusty nights the furnace fires shot forth a fiery glamour, that, like a new cult, made the old one tremble. *Dead* lights went out in that ruddy glow, the wail of the storm through the cordage was overpowered by the furious floats smiting the flying waters, as a minor plaint is drowned in the crash of a military march. Ah! gone was that stupendous silence, that overpowering majesty of midnight heaven and sea (amid which the mariner felt awed, tamed, frailer than a babe in a giant's arms), for he felt the tremendous pulse of the Titan quivering beneath his feet, and the thunder of his iron tread on the deep. A confidence grew that was fatal to Davy's reign; he soon shared the doom of contemned rulers, he was scorned, defied, chaffed, pelted with Yankee wit, till, to-day, none is lubber enough to do him reverence. No longer does Jack propitiate him by wearing a child's caul, he prefers a stout life-belt to all the amulets and charms in the world; instead of reading books of fate, he spends his watch below in studying those sciences that are needed for examination before a Board of Navigators, for he no longer believes in being always *poor* Jack; the quarter deck is open to all who have brains and pluck to fight their way thither.

The precision of nautical science has greatly affected the sailor; for the methods of manipulation that suited the slumbering roll of the old "heart of oak" are unfit for the steamer. The new power is a docile slave to the-

capable, but a consuming monster to the ignorant and obtuse. The sailor had to be drilled to extreme vigilance day and night to prevent catastrophe. Rigid exactitude took the place of haphazard and guess. The changeful untraceable face of the ocean was cut into "runs" and "lanes," along which rushed the vessel almost as accurately as its sister, the locomotive, over the rails on land. Little by little new tasks were imposed on the willing machine, and soon propulsion was reckoned as only one of its duties. It filled and emptied the hold, it hoisted the anchor and furled the sails. Jack's muscles had less and less to do, but his brains more. Electricity came on board, too, and offered its services, and instead of the old shouting of hoarse mandates, mixed with oaths, through a speaking trumpet, now silent signals convey to him the wishes of his officers. The winds and storms that had seemed of inscrutable generation, and mere chaotic swirls of air more or less mad, were shorn of all their mystery; their birth, career, and death clearly laid before him, and guided by his barometer, he could foretell their approach as easily as he knew the run of the trades. The currents and drifts of the ocean were studied, and the puzzling stream of warm water that he met with amid the chill waters of the Atlantic was explained as the rebound of the great rush he had noticed in the Mexican Gulf. These definite statements of cause and effect, the amazing economy displayed in shipbuilding, the endless inventions that beset him on every side forced his mind to pursue scientific methods, instead of use and wont and venerable rule of thumb. A revolution, less in degree, was going on the while in sailing ships, so that when Jack took "a spell" on one of them, he found that the fast clippers, that ran with tea from China, or with passengers to Australia and New Zealand, were almost a match in point of speed with the steamer. They were navigated with a daring velocity that would have seemed mad recklessness to the tars of other days. No longer did they creep under bare poles away from the savage pursuit of the winds. Round the wild gallop of the cyclone they went, making its frenzy subservient to the commerce it had before harassed and crippled. The terrific gales that raged round the Cape of Good Hope were no longer considered the sailor's special grief; into their midst the clipper was thrust, and went before them bounding like a wolf into the quiet of the Southern Ocean. "Softly sleeping on the billows" was now forbidden by owners and merchants. Produce was worth nothing in a ship's hold; its value existed only in the consumer's hand. The time occupied in transmitting it over the sea was a loss; the more it was abridged, the more gained. Every appliance of science and art was brought in to aid this, and Jack's wits had to be as agile under canvas as under steam.

The social ideas of the epoch have affected the seaman more, perhaps, than any man, save the miner. In little more than an age, he has changed more than he had in centuries before. In no profession is there so sharp a contrast as that which exists between the man who toils the sea to-day and the man who did it a generation ago. The cause is not remote. When the fierce uproar that old Napoleon had made for twenty years was silenced in 1815, a multitude of men were let free from the fleets to carry on the long impeded commerce of Britain. Sea dogs were they, illiterate, and embruted by the trade of war. Discipline and drink were the two conditions under which they had lived—the one on ship, the other on shore. They speedily impressed their rude conservative ideas on the whole service. The sailor was a thing apart from landsmen, a feeble, lubberly race, that were unable to look the sea in the face without shudder and sickness. To distinguish himself from these emasculates, he wore a garb that is said to have been once the fashion of Dutch fishwomen (save in the matter of pantaloons), a tarry round hat, an uncouth pea jacket, and a pair of duck trousers that fluttered like half-reefed topsails round his ancles. Occasionally he sported a glowing yellow silk handkerchief round his coppery throat, which was covered with a manly beard; itself a matter enough to contrast him with the "shavers" on shore. He swore his strange oaths in a Plymouth accent; he spoke out his notions with a blunt contempt for all others. He grumbled now and then at the skipper's whims, but he respected authority. He was quick to anger, and deemed fighting the manliest way to settle an argument; he detested fluency of speech, save in the matter of yarn-spinning, and his terse dramatic style of narration was the opposite of that which is found in books. Glib talkers he called sea lawyers, despicable fellows, who would rather reason than stand up and have it out like a man. The very fibre of the men was different from most of their contemporaries on land, for the class was recruited from those restless, insubordinate, indocile lads, the recurring savages that reappear in the midst of civilised communities. And the long absences they made from home, the monastic habits of ship life, the lower races they met with in trading, the comfortless *ménage* of the forecastle with its coarse food and young rum for diet, the iron discipline that forbade the officers to be on kindly familiar terms with the crew, the want of even elementary instruction, all these circumstances and dispositions intensified the distinction between the seamen of the present and those of a few years ago. The steamship was hated by them with all the comprehensiveness of ignorant wrongheadedness. The time was come for old salts to slip their cables, when navigation was to be performed with hot water! They battled with the new idea, and, as they fell, worsted, before its iron might, men of a higher breed stepped into their places. Then

began that vast drift of humanity to the west and south, which made the domination of the landsman perpetual. Women and children, whom he saw only at long intervals before, now went with him in hundreds every voyage; their presence melted down the rugged callosities about his heart that had grown hard by friction with men; and that gentleness and refinement he had in him was fully exercised. Then these emigrants were fleeing from "impossible Europe," inspired with ideas of independence, and expressing hatred of tyrannies in a manner that made Jack stare. His lot had always been one of dog-like submission to authority; for, even when he had kicked up a shindy ashore, and found himself in the dock for thrashing the policeman who came between him and his grog, he always took his penalty with reverence and respect for the magistrate that inflicted it. A halo of divinity still hedged King or Queen in his simple mind, and when he heard those sacred names treated with flippant contempt or denounced in vehement tirades, he had no feeling but one of violent indignation. Gradually, however, he became a tolerant and even a sympathising listener, when his personal loyalty was not concerned. The contrast, too, of the condition of the class out of which he sprang—viz., the labouring man and the artisan—on either side of the Atlantic, set him thinking. In Britain the workman was then a poor, dull fellow, untidily, inartistically attired, ill-educated, with no career before him; but to his simple mind, the American presented a smart and gentlemanly appearance, and, his working dress cast off in the evening, he took his place among his fellow-citizens and enjoyed himself reasonably, talking neatly, if not elegantly, and expressing by word and deportment a man who found the world a pleasant and hopeful abode. The influence of the American seaman upon him increased these impressions. The old differences that had existed between the two, from the time of the American war, were expiring; the triumph of the *Shannon* over the *Chesapeake* was no longer flung in the Yankee's face as if it were *his* particular ignominy, so the republican ideas of the one were grafted on the loyalty of the other. Books and newspapers of all sorts told their tale in the forecastle, and kept up continued circulation of advancing notions of all sorts. The spectacle of labour in revolt on both continents finally communicated its contagion to him, and the influence of economic logic completed his subjection to civilisation. He fell under its sway, another "noble savage" constrained by the sweep of that awful force that is steadily outstamping all "peculiar people" afloat or ashore; that tremendous power that says to men and sailors, "assimilate or perish." Jack is now attired like other men, often wears a "long-faced" hat, and is only remarkable for his bronzed visage, and rolling gait. He now disdains the rude provisions offered of old for his

food. Salt horse and worm-eaten biscuits are no longer "good enough for sailors." He is looking forward towards better treatment and better accommodation. This is nothing but the natural result following on the good accommodation, good wages, and good treatment always found on good steamers. His old improvidence has given place to financial thoughtfulness. He has not, and is not likely to enter into forms of co-operation for conducting maritime affairs, similar to those that are at work on shore; but that the sons of the waves should enjoy in their fullness those blessings of progress which have already so materially increased the happiness and comfort of their brethren ashore will be gainsaid by few.

OUR GREAT PORTS.—London.

Of all cities, ancient or modern, the metropolis of England is the most remarkable for its wealth and extent. To reproduce in a short notice its progress as a trading community is the present object.

It is said to have been founded by the Romans, A.D. 49. It was then named Augusta, on what account is disputed, and how long that name endured is not exactly known. During the Heptarchy it was called by various titles, such as Caer-Lundain, Lundain-Byrig, &c. In the famous Welsh Triads it is called Llundain; but for centuries past it has been universally known by its present appellation.

Even under its Roman conquerors it became a place of great extent and power. Tacitus states that, in the time of Nero, it was famous for its commerce. He terms it the *nobile emporium*. It was, however, destroyed by fire by the Britons under Boadicea in the year 61. Having no fortifications it suffered severely in those times from the effects of war. It was afterwards restored by the Romans, and Herodian records that, in the time of Severus, it became "a great and wealthy city." For more than a century it remained in a defenceless state, when a wall of stone and brick was raised around it. Then its extent measured from Ludgate Hill to a little beyond the Tower. Its breadth was scarcely equal to half its length and narrowed at each end.

During the long dark period from the first to the twelfth century the breath of trade appears to have been stifled, not only in England but on the Continent. Commerce, indeed, seems to have had a revival in Italy during the eleventh century, and, in the twelfth, the famous Hanseatic league was formed. It was not until the dawn of the Reformation that London appears to have enjoyed any great progress in that respect. We are indeed told by FitzStephen that, under Henry II., "no city in the world exported its merchandise to such a distance." Perhaps the first

great impetus given to the trade of the capital was by Edward III., who has been accounted by some as our first "Free Trader." He it was who invited the Flemings over to develope the woollen manufacture. There is little doubt that the commerce of England owes much to that enlightened monarch. Previous to his time it had flourished to some extent, for Customs were first levied by his grandfather, Edward I.—namely, by the 3rd Edward I., record of which is lost; but the right saved and established by 25 Edward I., cap. 27. However, it is equally true that Edward III. entertained the most enlightened views regarding "Free Trade;" a letter of his upon the subject being yet extant, and his policy was only checked by the men who now would be first to back him—viz., the merchants of of this kingdom.

In the year 1355, the first statistical gleam of light is thrown upon the value of our imports and exports—the former being valued at £38,978, and the latter at £294,184. The goods sent out of the kingdom consisted of wool, coarse cloths, and leather; whereas those imported were fine cloths, linen, mercery, wine, wax, and groceries. About this time a stimulus was given to the trade of London by the immigration of a number of Lombards. The city of Lucca was then governed by a tyrant named Castrucci Castracani, who, in 1310, banished 900 families from that flourishing place, so famed for its manufactures of silks, velvets, and brocades. Of this exodus, thirty-one families are said to have settled in Venice, and the rest were scattered over Europe, some finding their way to our metropolis, where they found a welcome and secure asylum, and where they conferred, by their great industry and business capability, as great a benefit as they received. During the two following centuries, nearly all the trade of Europe was in their hands, and still, long after their decline, the name of Lombard Street is famous and continues to perpetuate their memories. At an early period, London adopted the plan of incorporation for the benefit and extension of particular trades. So early as 1296, the company of "Merchant Adventurers" was formed first by the Duke of Brabant. It extended to England in Edward III.'s reign, and was incorporated by Charter in 1564. Another famous company was that of the "Merchant Tailors," of which no less than seven of our kings have been members. Others, such as the "Drapers," "Fishmongers," &c., have a history of their own intimately intertwined with that of our great city.

One of the most interesting measures of those early times were the "Navigation Laws," which were first decreed by Richard I. of England, in 1194, at Oleron, in France, hence commonly called the "Laws of Oleron." These early statutes have been much admired. Others have followed, from time to time, variously affecting the well-being of our maritime relations. In 1381, 1541, 1646, 1786, 1833, the more

extensive Acts have been passed, till their final repeal in 1849, and the introduction of an entirely new policy.

In the meantime, various schemes have been put forth by some of our kings to foster the Mercantile Marine. In 1449, Henry VI. granted several privileges to one John Taverner, of Hull, who had built the largest ship then seen in England, which the King named the *Grace Dieu Carrack*. A licence was granted to this person, and its tenour was as follows:—That he be allowed to export "wool, tin, skins, leather, and other merchandise, from the ports of London, Southampton, Hull, and Sandwich, belonging either to English or foreign merchants; and freely to carry the said merchandise through the Straits of Morocco, into Italy, he paying alien's duty on the same, and *upon firm expectation that he would, in return*, bring such merchandise of other nations as were most wanted in England, as bow-staves, wax, &c., whereby a great increase of the duties and customs to the Crown would ensue, and much gain to the subject." At that time, according to Hakluyt, the value of shipping was about 30s. per ton, at which price merchants of the present day would, doubtless, like to purchase. In the reign of Henry VI., a London company sent a number of ships, with general cargoes, valued at £24,000—a large sum then—to trade with Morocco, but the expedition was destroyed by the Genoese, who were jealous of the interference with their trade. At the commencement of the reign of the next Henry, *i.e.*, 1485, London merchants first began to trade regularly with Italy, and a Consul was thereupon appointed for the protection of their interests at Florence. But, according to the testimony of Sir William Cecil, a London merchant, there were not above four merchant vessels exceeding the burden of 120 tons, belonging to the Thames, up to the time of Henry VIII., and that "there was not a city in Europe, having the occupying that London had, that was so slenderly provided with ships." In this reign an Act was passed to encourage the art of shipbuilding, by means of a Government bounty, paid to the owners, of 12s. per month, when such vessels were used for the purposes of war.

It was, however, in the time of "good Queen Bess," that commerce began really to bud into life. In 1559, when she began to reign, an Act was passed to regulate the collection of the Customs' duties, by compelling the landing of goods at certain places; and about the same time a new Custom House was built west of the Tower.

The next great lever to lift up the trade of London was the settlement, at Spitalfields, in the sixteenth century, of a number of French silk manufacturers. After that, the fine cloth manufacture was introduced from Flanders. In 1559, the East India Company was formed in London, and opened up that immense commerce with the east, which

has given it such an incalculable amount of wealth. It was started with a capital of £30,000, in 101 shares. On the 31st December, 1660, its Charter of privileges for fifteen years was obtained. In May of the following year, its first adventure, consisting of five vessels, measuring 1,330 tons, of the value of £27,000, sailed from Torbay, with cargoes of bullion and merchandise, amounting to £50,000. The expedition succeeded, and for years the profits amounted to 150 per cent. on the capital invested. A rival association was formed in 1693, but in consequence of the inconvenience arising from competition, an amalgamation was effected in 1701, under the title of "The United Company of Merchants of England, trading to the East Indies." At the close of the reign of Elizabeth, cotton, the king of our manufactures, was introduced; and, although it has not settled down kindly in London, it must have yielded its quota of success to the city, which is the trading heart of the kingdom, benefiting so much by its manufacture. In 1651, coffee was first introduced, and 20,000 cloths were said to be sent annually from London to Turkey in exchange. The sugar trade was also established about this time, and, as everyone knows, forms a fruitful source of revenue to the Government, work to the labouring class, and profit to the merchant. One of the principal seats of sugar-refining is at Whitechapel. As an index of the immensity to which this trade has grown, it may be stated that, in 1870, the quantity of refined and raw sugar, and molasses imported into the United Kingdom reached the surprising total of 692,780 tons, of the declared value of £17,524,215. The major part is brought from the West Indies, and, supposing a vessel to make two voyages annually, this traffic would employ 692 ships of the average carrying capacity of 500 tons. In that year the Customs' duty collected amounted to £3,999,294, of which £1,152,295, or about one third, was received in the port of London. It may not be amiss to mention here that, in the year 1660, an important feature was introduced into the departmental administration of the Government, which, especially in the metropolis, where it held its seat, exercised a most beneficial influence over the fortunes of commerce there. This was the establishment of a "Council of Trade for keeping a control over the whole commerce of the nation." This was the origin of the present Board of Trade. Previous to that time many of our Sovereigns had been in the habit of granting "charters of incorporation" and "monopolies"—notably, King John, Henrys III. and VII., and Elizabeth. These things, though meant to foster, only cripple trade and paralyse enterprise. But, since the formation of the "Council," such mistakes have been avoided. In a recent article, in one of our best conducted provincial newspapers, bearing on this subject, these remarks occur:—"It was in the year 1660, that these trading fetters received their knock-down blow. In that year

a Board of Trade was instituted for the purpose of consulting on, and protecting, the interests of commerce. The power of monopoly has been gradually broken since that time." It is not surely too much to say that the mode in which that Board is now conducted fully bears out this encomium and its own noble traditions.

The next great feature in the commercial history of the metropolis was the establishment, in 1694, of the Bank of England, the honour of proposing which belongs to a Scotchman named William Paterson. Six years after that the prohibition of importing lace from Flanders was taken off, in order that English woollens might be admitted there. This caused a considerable stimulus to those branches of business. During the first half of the eighteenth century, trade was much checked owing to the bubble South Sea scheme, the rebellion of 1715, and the Spanish War.

After the peace of Aix-la-Chapelle (1668) commerce in London revived with wonderful rapidity, and this prosperity continued until the breaking out of the American War, when it languished until peace again infused new life into it. A period of success again ensued until 1790, when the French War broke out, and then the exports fell £2,000,000 below the preceding year. Many bankruptcies followed, and great commercial distress, until the Legislature interfered and voted £5,000,000 Exchequer Bills "for the use of such persons as could give sufficient security." This allayed the trouble, and, in the course of a few years, the elastic limbs of commerce had received fresh strength by spreading out into new channels.

In 1802, a new era was inaugurated at London in the shape of the docks—the first of which—the West India Docks—were opened on the 27th August of that year. Others were added from time to time, though most of them were created in the first twenty years. After the above the London Docks followed. Then the East India, St. Katharine's, Commercial, and others, in more recent times. These immense works—monuments, as they are, to the enterprise of the citizens of London—comprise upwards of 300 acres of floating room, and have cost more than ten millions of capital. The dues were very heavy at first, but, on the lapse of the Parliamentary privileges, about the year 1827, they were much reduced. In 1803, a most important measure was carried, commonly known as the "Warehousing Act." Previously, goods liable to duty on importation were paid by the merchant on landing from the ship, except in the case of British plantation rum, which, for a number of years, had been allowed to be warehoused free of duty *only* for the purpose of being again exported as ships' stores. From that year, however, the merchant could land certain goods, warehouse them, and pay duty when required for use or sale. The boon thus afforded was immense, especially to the London men, who import such large quantities of high duty goods. In many

cases it was simply enabling them to double their business with the same amount of capital. In the article of tea, it was long specially a boon, as, from the peculiar features of that trade, London has been, and still continues, its great emporium for the British Isles. For instance, in 1870, the amount of Customs' duty paid on tea in the United Kingdom was £2,940,613; and in London was collected more than two-thirds, or £2,041,082. Other goods are also assessed in somewhat similar proportions.

The great development of steam traffic has afforded another great source of wealth in modern times to this city. In 1829, about fifty steamers traded from thence; this number was doubled in five years; and now they are legion itself. It is curious to note, in the records of swiftness of this mode of conveyance, that some forty years ago the distance to Margate—some eighty-four miles—was usually performed by the *Magnet* and *Royal William* in five hours, being at the rate of nearly seventeen miles an hour. This was exclusive of stoppages; but it may be questioned whether many of our river steamers, excepting those on the Clyde, exceed that now.

Passing from the consideration of the various leading trades, springs of commerce, incidents or measures, which have arisen to add to the lustre and importance of London as a trading community, a glance at a few statistics may serve to render the increase more palpable. In the year 859, it is said of England her commerce was so extended, that 800 vessels were employed in the port of London for exportation of corn only. But at that remote period it is difficult to procure anything like accurate statistics of shipping. In those days there were no registrars of shipping and seamen to tell us how many tons and men constituted our Mercantile Navy. The first accurate account compiled was obtained by the Commissioners of Customs, in 1702, of the vessels belonging to the kingdom. From that account and subsequent ones it would appear that of the vessels registered at London, there were:—

In 1701	...	...	...	...	560 or	84,882 tons.
,, 1800	...	...	...	...	2,666 or	568,268 ,,
,, 1870	...	...	...	...	2,911 or	1,068,687 ,,

The number and tonnage of vessels entering the port of London from foreign and colonial ports were:—

In 1796	...	...	...	...	4,176 or	723,988 tons.
,, 1831	...	...	...	...	4,396 or	1,050,147 ,,
,, 1870	...	...	...	...	11,009 or	4,089,866 ,,
,, 1871	...	...	...	...	11,268 or	4,825,187 ,,

The number and tonnage of vessels cleared outwards for foreign and colonial ports were:—

In 1861 ... ... 8,449 or 2,428,306 tons.
,, 1870 ... ... 7,912 or 2,026,916 ,,
,, 1871 ... ... 8,369 or 3,328,288 ,,

The number and tonnage of vessels entered inwards coastwise were :—

In 1826 ... ... 20,489 or 2,441,776 tons.
,, 1861 ... ... 17,406 or 3,171,076 ,,
,, 1870 ... ... 12,793 or 2,849,872 ,,
,, 1871 ... ... 11,763 or 2,667,583 ,,

The quantity of coal brought to London by coasting vessels was :—

In 1832 ... ... 2,139,078 tons.
,, 1862 ... ... 3,442,432 ,,
,, 1870 ... ... 2,993,710 ,,

In the latter year, the much larger quantity having been brought by railway accounts for the falling off of conveyance by the coast, for it is found that the coal brought by land carriage and inland navigation amounted to :—

In 1862 ... ... 1,791,982 tons.
,, 1870 ... ... 3,775,297 ,,

Of the Customs' duties collected in London there were :—

In 1710 ... ... £1,268,095.
,, 1800 ... ... £6,468,655.
,, 1870 ... ... £10,017,758.

The population within the city proper has, owing to the extension of trade, actually decreased; that part of London being now almost one enormous counting-house. In 1861 there were "within and without the walls" of the ancient city, 112,063 persons; but in 1871, on the census night, that number had dwindled to 74,732. To get an adequate idea of the vastness of the "modern Babylon" as a whole, the numbers found in the "outer ring" of the Metropolitan Police division will require to be studied. One historian, writing in 1746, calculates the population at 992,000; but Dr. Brakenridge, in 1754, sets down the number at 751,812, and this is generally assumed to be the more accurate estimate. The first census was taken in 1801, and those returns furnish trustworthy data. They are as follow :—

In 1801 ... ... 1,099,104 persons.
,, 1831 ... ... 1,474,069 ,,
,, 1851 ... ... 2,362,236 ,,
,, 1871 ... ... 3,251,804 ,,

If, however, the numbers in the "outer ring," or those included in the Metropolitan Police District be included, then the numbers are :—

In 1851 2,680,785
,, 1861 3,222,720
,, 1871 3,883,092

The few figures given must show plainly enough the remarkable increase in the population and trade of London. In the present century the increase of the inhabitants has been about 300 per cent. The increase of importing tonnage, as an indicator of commerce, has increased in that time about 600 per cent. It thus appears that this mighty city is actually growing richer in a quicker degree than she is expanding in her population.

Twelve hundred years ago, the Venerable Bede styled her "an emporium for many nations repairing by land and sea." FitzStephen, 600 years after that, says, "her imports consisted in part of gold, spices, frankincense from Arabia, precious stones from India, palm oil from Bagdad, &c.," and still she proudly retains her place as the first import port of the world, and pre-eminently the "mart of the nations."

Our next sketch will be one of Liverpool.

A TIMBER VOYAGE OF THIRTY-THREE YEARS AGO.

[THE following fearful narrative is strictly true. We do not recollect reading a more graphic description of a painful voyage. We have abstained from altering it in any way, as we believe that its style is the best guarantee that it is genuine. It forms a striking contrast to the voyages performed by the means of "hot water" at the present day.—ED.]

WE sailed from England about the beginning of September, 1889, but before I start I will give you an account of the vessel. She was about 700 tons register, barque rigged, had in her younger days been a first-class vessel, of London. She had a large poop cabin, so that it was 8 or 10 feet before the mizenmast, so large that everything, rope, sails, provisions, &c., were stowed in the two after state rooms. One state room for the master, one for the mate, one for the second mate, and one for the steward. Outside, one cabin for the pantry; and, on the port-side, one for the carpenter. So any person can judge of the size; but, it is my opinion, it had been made larger to allow everything to be there, so that they could have a flush deck below for the timber. She steered on the poop; the wheel was abaft the cabin skylight. I believe she had had a figure-head some time, but now only a gammon knee, and, like many others, she looked well with putty and paint, but the tale will tell her abilities. She had no top-gallant forecastle, so the crew lived in the lower forecastle, and she had a very good one for a timber droger; and, for her class well found; and the crew was good: there were the master, mate, second mate, boatswain, carpenter, cook, three apprentices, eight able seamen, and three ordinary—one of the

apprentices acted as steward—so you see she was well manned, but the hull was weak. As I mentioned before, she had a large poop, but, instead of her boat in the davits on the starboard side being abreast of the poop, it was more abreast of the main rigging and main-topmast backstay, so that she was obliged to be well griped in or the main sheet would strike her. We thought once or twice to shift her; but it was not to be.

We sailed about the commencement of September, and after putting in twice to Falmouth, got safely way about the middle of the month with the wind about N.E., and, in four or five days, made Cape Finisterre. Running along the coast of Portugal we sighted Madeira and the peak of Teneriffe, running down inside the islands for Cape Verd. Did not see Cape Verd, but sighted Porto Praya, one of the Cape Verd islands, and I think in about thirty-nine days, we made Cape Sierra Leone, and received a pilot, and, the next day, got to the town and anchored abreast the watering-place. We had no cargo to deliver, for we were in ballast limestone, but we had several little things for several merchants that had been put on board. We shipped our kroomen the next day—twelve hands to assist in loading. They are a free race and a fine lot of men on the whole; they are commanded by one head man and a second head man, and their word is law with them. You will laugh when I tell you the name of some of them. The head man was called King Charles; second head man, Emperor Napoleon; the crew, Bottle of Beer,* Pea Soup, Jack Savage, Happy Jack, and those names were all given to them when first they come up from Cape Palmos, for that is the part of the coast they belong to, and go home about every two or three years, when they have got enough to make their father a good present, for which, if he is a good boy, his father gives him a wife but whether he gets one every time I cannot say; but, by what they say, the meaning is as such. Now, there is a thing I am going to speak about which is of everyday occurrence, or as often as vessels arrive from England, it is this: so much sickness happening, causes seamen to be scarce. Seamen know that, and if, by any chance, they can pick a quarrel with the mate or master, they do. So that the master puts

* This is the same at the present time, and presents a peculiar difficulty in making lists and keeping records of kroomen serving on board British ships on the West Coast of Africa. There are now sometimes half a dozen men called "Soda Water," nine or ten "Baccy Pipes," a few "Bottles of Beer," several "Cocky Waxes," and "Kings," "Emperors, "Statesmen," "Merchants," "Old Pumps," "Tin Pots," "Bilge Water," "Gunny Bags," "Towns," "Cities," &c., &c., without number. It has been facetiously suggested that, before anything like a trustworthy record can be kept sufficient to distinguish one "Soda Water" or one "Baccy Pipe" from another, the Board of Trade will have to obtain the sanction of Parliament to export parsons to christen them all.

them in gaol; they, in most cases get a month; they have nothing to do only clean out their ward; their wages are paid for that month, which they get. The ship pays for their board, and after a month they are clear men, and likely, in a few days, ship for the homeward voyage for £6 or £7, and often £8 per month. They have not been up the river where the sickness is most; and I know for a fact that there were at that time a very great many seamen shipped in England for Sierra Leone or the Malacourio rivers for £2 5s. or £2 10s. per month, for the sole reason to get to Sierra Leone; but, before they arrive, they pick a quarrel, and then they are clear. We had one or two, if not more, on board of this sort; but I being at Sierra Leone before, knew all about it, so I kept them as quiet as I possibly could. The master, who was never there before, was, in two or three instances, going to admonish them, but I advised him otherwise. So, after being there three or four days the pilot came on board in the afternoon, and we got our anchor, and went over to the other side of the river—the Bullam side—to heave the surplus ballast out, for they would not let us leave it there, and anchored. Sent the top-gallant mast two yards and mizen-topmast down that night all right. The next morning the master went over to town, and we began to get the ballast out until about half-past ten or eleven o'clock, when I found they were very slack. I had buckets of lime juice and sugar in the hold to drink. It was no use; they could not work without grog. So I said to them, "You have all signed for five shillings per month without grog, so if you will have grog the five shillings will be stopped." They said they did not care about that, so I went to the cuddy, and the steward brought some rum, and gave them a glass each. They thought I should be obstinate, and that would be a plea to have a row, but that would not do; I wanted the ballast out. They went to work again, and worked till dinner. After dinner, they must have another glass, and at three o'clock, and another at five o'clock, and then tea. We could not get the whole out that night. At eight o'clock they came for a glass, so I gave them a bottle, which would be just a glass a piece, but thought the bottle looked better. The work was hard, and they were not used to it. I think they deserved it. About nine o'clock the master came on board. He asked if all was out. I told him "No." He said, "I do not see any dissatisfaction on board." "You have not been on board," I said. So he said, "What is it?" So when we got to the cuddy and I told him, he was going to storm out, for he had a drop in his eye, but I cooled him down, and told him if he wanted his vessel loaded, he must have spirits on board. Before I knocked out I saw him and explained all to him. He was quite satisfied. When I knocked out, they had their glass, and went to work at breakfast. Before they turned to, the master saw them and

made all square. We got all the ballast out that night, except fifty tons, which we were obliged to keep on board, for she would not keep on her legs without it. We started for the river on the flood tide, and what with kedging, towing, and dropping, we got in four days to our destination, at a factory called Lemon's Factory, opposite an island called Bances Island, where the negroes have a fetish, or festival, to their gods, I think, once a month. There were several during our stay. I shall not give an account of loading, only little incidents. Several of our people were taken ill with yellow jack, the master nearly the first, and recovered that time only slight; two men died, and about the 10th or 12th of December I got it myself, and went down to town, and left the second mate in charge. The master at this time had a second attack, so the vessel was at the mercy of all. I got to my thoughts about the 20th, and very weak, and scarcely able to move, and about the 28th December, the master sent for me, and showed me a letter from the factory. The second mate, and some of the people of a brig loading there, and some of our people, had been fighting with the Kroomen, and they had taken the few arms we had—six muskets, six cutlasses, &c., and drove them overboard, and wounded several. So he asked me if I could go up. I said I would try. I was carried to the canoe, and in twenty hours got up. Found the second mate and three seamen gone in the Jolly Boat. Heard all. One party said they were right, so did the other. I made it as smooth as I could, but knew who was in fault, but let it blow over, for I wanted the ship down to town, for we had two tier above the hold beams. I nearly lost the carpenter, for one Sunday morning, about eight o'clock, the steward came and said there was a gig with four darkies, and a lady steering. I was afraid there had been a rising below. She came alongside. A curious sight, four naked men, black, and a pretty-looking female, about twenty-five or twenty-six, not older. I assisted her up the side, when she told me she was Mrs. ——, the master's wife of a barque loading about ten miles below us. Her husband and all hands, except the senior apprentice, he being second mate, were ill at town, and some were dead. She wanted the carpenter to go with her down to caulk the ports in Mrs. ——. Had some breakfast, and then they went down, and on the flood he came back, and I was asking him a few questions, when he said he did not feel well, when, for that vessel had a nasty smell, I gave him a strong cup of tea; it made him sick, and what came was as green as grass. I sent him to sleep, but about eleven o'clock I was called, and found that he wandered in his head. Ordered four kroomen in the skiff. Put him into her, and sent him to town, and when I saw the doctor, he told me I had saved the carpenter's life, for he said it was one of the worst cases, but the man had a good constitution. There is another case of

accident, one of our kroomen on the raft. For each piece of African oak has about twelve pieces of cork wood. Four pieces in three separate places to float it, and they are tied on with rattan, so when the man on the raft gets the length from the hold, he picks out his piece, and has to pass a pair of slings round the timber to support it, while he cuts the bands. In doing so, it got foul of the cork wood, and he laid on the log and was clearing it, when he gave a scream, and the other man dragged him on to the stage, fearing he was jammed; but what a sight came to view—his right arm, from elbow to fingers, was nothing but bone and sinews and jagged flesh. I jumped on the stage, and tied a handkerchief as tight as I could, just above the elbow, and put the poor bone into a bag of flour to stop the blood, and sent him to town. The man did not die, but had his arm taken off. The doctor told me I could not have done better. It must have been a shark, or alligator, but we saw nothing, although we saw the alligators and sharks very often. We got loaded at last, and all ports caulked in, and got down to town about the latter part of January; found the master unable to speak, for black vomit had set in; and when I last saw him alive he was sensible, but could not speak, and wrote the few words on a slate; stopped with him till morning, although myself I was very weak. Early in the morning he died, being choked with pieces of black blood. We buried him in two days; could not keep him, and then the consignee told me I was to take charge, although I was very unwilling, but it was Hobson's choice, for there was no one else. So we made up our crew with what we could get at £7 per month, and those would not ship as able seamen, for they were the worst I ever saw. I made the boatswain mate, and the carpenter second mate, and made up the difference with the crew, for the vessel was leaky. I think weak all through. I was anxious to get away, although there was not another on board that knew a word of navigation, but had taught one of the apprentices a little. He helped me. So that the beginning of February we bid adieu to Cape Sierra Leone, with between eight and nine hundred load of African oak on board. I tried to get to the southward, but could not, so I tried the north passage, not being afraid of the coast, as I had been along it so often before; but, unfortunately, as we got to Cape Verd, and the islands were rather to the southward, and fell into a part of the coast called the Rains, and it was not called so for nothing, for we had for five or six days nothing but rain, and the wind veering about, first one way and then another, so that we had the braces always in hand, although not much of it. The vessel about this time gave signs of great weakness, for she gave us a good spell at the pumps every two hours. We sighted the island of St. Vincent, the westward of the Cape Verd Islands, and then tried to get to the northward, and two days before we made Fayal, the southward of the western islands, our

vessel gave us a spell every hour. Found a fine breeze from the S.W.; sighted Fayal, Peak of Pica, and passed between Terceira and St. Michael's. Should have gone into Fayal, but having such a fine breeze, was glad to keep going, expecting in a fortnight to be home, or a week, if the wind held. Carried the breeze for two days, when we found it came to the N.W., then the north, and at last at N.E. and squally; and after about seven days it came on very hard. Laying to, with close-reefed main-topsail, and fore-topmast staysail and main-topsail, ship making much water, although we had good pumps of the sort; but, unfortunately, the chambers of the pumps were lead, and having limestone ballast, the grit cut the boxes, so that the carpenter was fully employed leathering the boxes. One squall blew the main-topsail and fore-topmast staysail to pieces, and we managed to bend a new one, and it was no sooner set than it blew to pieces also. We bent the last and only one, but did not set it, but laid her too with main-trysail, and fore-staysail, but tried all we could to keep her to. Tarpauling in mizen rigging, and topmast staysail abaft the mizenmast, and all no use, she would fall off, and come too enough to sweep the decks. At last we decided to make a drogue sail, and was preparing one, and should have it ready after dinner. The people went to dinner, and there were only the mate, carpenter, and myself on deck The helm was lashed a-lee. The carpenter came and said, "I thin the gammon of our bowsprit is adrift." I said, "It cannot be, for she has a preventer gammon on, but we will see." So we walked forward, the port side, but before we got past the windlass she came flying to. She had fallen off, and shipped a mountain of a sea, for if she had struck a rock the concussion could not be more. I thought it was all over with us. I was found jammed between the bracebits, pump, and mainmast, underneath a lot of bulwark, ropes, and other gear, my arm disabled, and bleeding from two cuts in the head. And what a sight to behold, I cannot describe it. Jibboom, fore and main-topmast, mizenmast, nearly all the poop, rudder-head, long boat gripe bolts drawn, and she landed on the lee stanchions, they all through her; galley, and all the port bulwark fore-yard, broken by fore-topmast—a fearful sight to behold. Chairs, tables, casks, books, clothing, bedding, sails, buckets, provisions, pieces of beef, pork, peas, flour, and crockery all washing about in board and out. I was obliged to hold my eyes and head, or I think I should have gone mad. Fortunately, we had sent the top gallantmast's two yards down three or four days before. How we proceeded I cannot tell; enough to say, we parbuckled the long boat over the side, for she was useles. Sounded the pumps, and when the rod came up wet, the line also, ten feet of water was in the hold, and if it had not been for over-persuading, they would not have tried to save our lives; but did so at last, after my telling them it was

madness to act so, for our only boat would not swim in that sea. Keep the vessel afloat until the weather fares, and then we will see what we can do. So one party worked the wee-gee, or pump, the others cleared the wreck, for I was afraid the mizenmast would batter our quarter in. We chucked the head of the rudder, fearing it would tear the stern-post. Hoisted the fore-staysail, to keep her before the wind to clear the wreck, and as soon as possible after made a drogue and rode by it, but it was the day after before we could look round ourselves, then we found that the greater part of our provisions was gone, all the water on deck gone; but, fortunately, we had two large casks in the forecastle, so we knew we had water for some time, but on looking at them found they had been tampered with, for one was half out, the other not so bad, and the galley being gone we were obliged to eat it raw, beef and biscuit, and pork and biscuit. We saved about four gallons of rum, which I served out to the best advantage. We were in this state for eight days, when the weather fared a little, and people nearly worn out, vessel getting deeper and deeper in the water, and at midnight on the eighth day found that the starboard pump had been carried away, and then decided to leave her. At daylight the decks were nearly awash. The weather had by this time fared better, but the sea was still very high, and was very much afraid of the boat. She had been stove in several places, but the carpenter had, when he could spare time, put some tingles on, so at daylight we mustered all we could. No one was to take only what they stood in, excepting the compass—we had saved one—provisions, and water. Got the topgallant masts and made them fast together, and made a large rope fast to the middle, and a piece of the poop likewise. So the time was come. About eight or nine we launched the spars overboard, first let them go astern, when we found that we had to be as quick as possible, for she was certainly settling, and, as Providence would have it, the sea about that time was remarkable still, so we lowered the boat. She was twenty-five feet long, single banked or gig fashion. So you may guess. Nineteen living beings. And when we got in I was afraid she would not swim, for we had to continually bale. We had, to the best of my recollection, about 40lbs. of beef and pork, about 20 or 22 gallons of water, about 40 lbs. of biscuit, and that wet, a few yams (a substitute for potatoes), 2 lb. tins of preserved meat, about 1 lb. of butter, and there was a chart and compass. All my instruments went with the poop, and I can assure you she had but $1\frac{1}{2}$ streaks clear, and if we had not the spars to ride by she certainly would have swamped. We had no sail, but had sewn two hammocks together, if we should require it, and a topgallant studding sail yard for mast. The carpenter had cut a step before, so we bid adieu and left her, and saw that she was

settling fast—I should suppose, for we had no time—my watch went with the poop, and that in about half-an-hour after we left, she gave two or three heavy lurches, for we were very close to her, and went down head foremost. So we were alone. I allowed we were about 320 miles from the Rock of Lisbon, but we were unable to do anything, only ride by the spars, for if we had not taken that precaution I should not have written. The carpenter nailed a piece of canvas across the bow from the fore thwart forward to keep the spray out, and there were several things in the boat that we had to throw overboard to lighten her. The first day we did not touch the provisions, for each had enough in his pockets, excepting the water. You must excuse my memory, for I can scarcely tell how we did eke out our allowance; suffice it to say that by the sixth morning every bit of food was expended. We had a little water which lasted another day and a half, and how we acted by chewing pieces of shoes, lead, &c., until the morning of the tenth day. The night before it was decided to draw lots. The most robust and strong were the worst, and to see them looking at one another was dreadful. There was one instance I put my authority to the test, when one of the seamen, the largest one in the boat, I saw him looking at his knife and one of the men on the thwart asleep, and he was in the act of cutting his throat, when I took the tiller and knocked the knife out of his hand, and threw it overboard. The man trembled, although he could with ease have done me the same. So on the tenth at daylight the lots were drawn, and, as is often the case, it fell to one of the apprentices, a nice lad, but an orphan. The carpenter and myself had decided not to touch anything of the sort, and begged of them not to carry it into execution until we made out what we supposed to be a vessel. There was great murmuring, but we were decided; and to our sight I saw a vessel, as did also the carpenter. The lad came to me, and said, "Master, if by any chance you get home, give my love and remembrance to my uncle and aunt." I told him I would, but hoped that I should not have to do it, and told him to keep aft in the boat, and we would keep it till the last, and in hope the vessel was true. Twice in the morning they wanted to kill the boy, but I told them "No; only at the last chance;" for we saw a vessel, but we were all half asleep, or our eyes were dim. We had stepped the mast, with the Ensign Union down, believing there was a vessel, but, in truth, we could not have seen her so long. At last the carpenter, when there was a squall of rain, said to me, "There she is," and I could see her as plain as possible. Then the fear came that she would pass us, for there had been two vessels seen, but they had not seen our lantern. It was both times at night time, and, no doubt, did not see us; but I could see plainly she was a schooner, with a topsail,

and in the squall lost sight of her, and then when the squall cleared saw that she had no topsail and appeared narrower, fearing she had tacked, but on looking again thought I saw a flag. Oh! no one can fancy my feelings. Although narrower, could plainly see she was coming to us, and if I had not been very rough, although a feather could have knocked me down when she came close, should have lost some of them, for there was a heavy sea then; but the master of the schooner was a first-class man, and laid his vessel right alongside, and hailed, and said, "Not one move till I help you." He laid his vessel to dead, and then he and his other crew, four in number, came and assisted us out of the boat, and what things was in her he took on board, and then let the boat go. I had a word with him, told him how we were situated, when he turned round and said, "Hear me all, the first man that touches anything to eat before I give it him, I will blow his brains out; look here," and showed a brace of pistols. They said they were so thirsty. "Never mind," he said; "you shall have something in a few minutes." He called the boy that was cook, and in a short time he brought a large bucket full of very weak soup; he got about a half-pint bason, and nearly filled it for each. "Now, drink this," he said. Some said they could not; would rather have water. He said, "No, drink this, or none;" so we all took our dose, and it was scarcely in our stomach before we were all sick. Then he blew off his pistols, and then gave each a weak glass of spirits and water, and then told us we could eat all we could get; but his provisions were very scanty, so he was obliged to put all on short allowance. But as we were coming home, we fell in with a barque, from Hamburgh to the West Indies; she supplied us with provisions and water, and nothing of very great importance occurred, for we recovered very slowly, and arrived in England the latter end of April. Thank Providence, we lost no one. You must excuse my cutting it so short, for the remembrance makes me feel very queer. Adieu.

Not Dead Yet.—That sailing vessels are improving, and can yet keep profitable pace with steam, is evidenced by the fact that the iron clipper ship *Star of Persia*, 1,227 tons, one of Messrs. Corry's "Star Line of Calcutta Packets," has just made a voyage to Calcutta and back in 6 months and 12 days. This is the quickest round yet accomplished by a sailing vessel. The outward passage occupied 77 days. The run from the Cape to Calcutta, a distance of over 6,000 miles, 22½ days. This is the fastest passage ever made from the Cape by either sailing or steam ship.

STATEMENT BY THE STEAM SHIP LINES ENGAGED IN THE EMIGRATION TRADE TO NORTH AMERICA, IN REFERENCE TO RECENT PUBLISHED COMMENTS UPON THE CONDUCT OF THAT TRADE.

The English and American Newspaper Press have recently published numerous articles reflecting, in no measured terms, upon the conduct of the Emigration Trade by the Atlantic Lines. Those articles have alleged that abuses of the worst kind exist; that the ships are over-crowded; that the sexes are not separated; that gross immorality prevails among the passengers, who are "huddled together like sheep, and treated like pigs;" that the ventilation is insufficient, the food bad and unwholesome, and the water impure; that the passengers are ill-treated by the crew; that the emigration officers do not perform their duty, and exercise no real supervision over the emigrant steamers; and that there is great mortality amongst the passengers. Newspapers of high position have not scrupled to make these assertions; and the most injurious practices and motives have been imputed to the Atlantic Lines, who are alleged to be actuated by the greed of gain alone.

These allegations have been echoed and re-echoed across the Atlantic; they have been quoted in the various provincial newspapers, and in the newspapers of foreign countries which supply emigrants to America, and they cannot fail to have had a great effect on the public mind.

As, however, these statements are in all material points false and unfounded, and proceed from persons who have no real knowledge of the facts, and as they are calculated most seriously to injure the reputation of the Atlantic Lines and to discourage emigration, it is necessary that the actual facts of the case should be placed upon record. In stating those facts, the Lines in question desire to protest in the strongest way against the injustice of such attacks, and to repel the charges made against them which have received such wide publicity.

It is now upwards of twenty years since emigrants first began to cross the Atlantic in steamers, and for some years later the majority were still carried by sailing vessels. But this is now entirely changed, and during the year 1871, 96 per cent. of the total number of emigrants to North America, proceeded in steamers. The number of steerage passengers so carried last year from Great Britain to North America was about 200,000. They were conveyed in 520 outward voyages; the number in each voyage averaging about 385. Nearly all of these passengers were carried by the following Atlantic Steam Lines:—

The British and North American Royal Mail Steam Packet Co. (Cunard Line).

The Liverpool, New York and Philadelphia Steam Ship Co. (Inman Line.)

The Montreal Ocean Steam Ship Co. (Allan Line).

The National Steam Ship Co.

The Anchor Line of Glasgow.

The Liverpool and Great Western Steam Co. (Guion Line).

The White Star Line.

It is from these companies that this statement proceeds.

There is no doubt that great abuses did exist, and if the reports of recent investigation by the American officers of emigration be true, do still exist in the emigration trade as conducted by sailing ships. With a view of preventing those abuses, the Passenger Act of 1852 was passed. This statute was repealed in 1855, by an Act containing more full and elaborate provisions for the protection of the emigrant. The Act of 1855 was supplemented by one in 1863. These two statutes contain numerous stringent and well-considered regulations conceived in the interest of the emigrant, and are applicable to steamers as well as to sailing vessels.

They provide, amongst other things, for the proper construction and equipment of the vessel, the state and sufficiency of her machinery, stores, boats, and crew; the quantity and quality of the provisions, the supply of water, the daily allowance of food and water to passengers; the arrangement and size of berths; the due separation of the sexes; proper supply of light and ventilation, and a number of other matters of a like character. The Acts provide heavy penalties for breach of the rules laid down, and contain full provisions for informing the emigrant of his rights, and a speedy mode of redress in case of any breach of contract by the ship-owner. The regulations are carried out under the supervision of a staff of emigration officers at the port of departure, whose duty it is to see that their provisions are obeyed and assist the emigrants by giving information or advice, and enquiring into complaints. On arriving in America, the emigrants are received by immigration officers of the United States or Canada, as the case may be, whose business it is to protect the emigrant in like manner, and who are very active in the performance of their duty.

This system has been found to work very satisfactorily. Under it the emigration trade, so far as it is worked by steam, has been conducted so much to the satisfaction of the passengers that emigration has largely increased, and has for some years reached such an extent as to permit the companies concerned to fix the fares at the low rent of £6 6s. per adult passenger. At the same time, the steamers employed have increased greatly in size, power, speed, and convenience, and are now, undoubtedly, the finest specimens of the Mercantile Marine afloat. The several fleets of the companies above mentioned, amount in burden (gross measure-

ment) to upwards of 300,000 tons, and number some 125 vessels. The Atlantic Lines depend very greatly upon passenger traffic; they are more exclusively devoted to that class of business than any other existing steam lines, and there is great competition among them. Whether it is probable that in view of their own interests, these companies would conduct their business in the disgraceful manner which has been publicly suggested, is left to common sense and impartiality to decide. With these general remarks it is now proposed to reply to the principal charges which have been brought forward against the Emigration trade.

Overcrowding.—Under the Passenger Acts, steerage passengers can only be berthed upon two decks. Upon the upper of those decks the number of passengers must not exceed the proportion of 1 passenger to every 15 clear superficial feet of deck allotted to their use; upon the lower of such decks it must not exceed the proportion of 1 passenger to 18 superficial feet, and if the lower deck is less than 7 feet high, the proportion is increased. As both passenger decks of the Atlantic steamers invariably exceed 7 feet in height, each passenger has considerably over 100 feet of cubic space on the upper passenger deck, and a still greater cubic space on the lower. Furthermore the number of passengers is restricted by the proportion of space clear for open air exercise on the upper deck. One newspaper pictured the emigrant as stumbling helplessly over the cattle and stores piled on the deck. It is scarcely necessary to say that the Atlantic Lines do not carry cattle, and allow no stores on deck. All the space is kept clear for passengers. Before the ship can receive from the Board of Trade her passenger certificate under the Merchant Shipping Act, she is surveyed by Government Surveyors, not only as to her structure, machinery and equipments, but also as to the number of passengers she is entitled to carry and her passenger certificate, which must be exhibited in a prominent part of the ship, states that number. In case of there being passengers in excess of the proper complement, the master or owner is liable to penalties. The passenger certificates must be renewed periodically, a fresh survey being required on each occasion. The Government emigration survey is additional to, and independent of, that by the Board of Trade. The emigration officer goes through and measures a new ship, and fixes the number of emigrants which she can carry on each deck and each compartment. Before each voyage he checks the number actually on board, by the previous measurement. In cases where the compartments and berths of emigrants are permanently fixed, the number of passengers allowed in each room is marked upon the outside.

The ship cannot proceed to sea without the certificate of the emigration officer that the provisions of the Act as to the number of passengers and all other matters have been complied with. There is not only an

emigration survey at Liverpool, but also at the port of call in Ireland, so that there is a double check. There is, therefore, not only no overcrowding, but, as above shown, there cannot be any such thing.

SEPARATION OF THE SEXES: TREATMENT OF FEMALE PASSENGERS.—The Passenger Acts contain clear and minute provisions on this subject. All the single male passengers must either be berthed in the fore part of the ship, in a compartment completely divided and bulkheaded off from the space appropriated to other passengers, or in separate rooms. This rule is strictly obeyed. With regard to married couples, the general practice is to require the wives to berth with the single women, and the husbands with the single men. Some Lines insist on this; others allow several married couples, on their own special application, to berth in the same room. On some Lines a sliding door, when pushed forward, encloses the passage between two rooms, and forms a dressing-room for women in the adjoining apartments, which is perfectly private; on the others, arrangements of a like character are made for privacy. The crew are rigidly excluded from the steerage during the voyage. This rule is most thoroughly enforced. They have no communication whatever with the passengers, and nothing at all to do with them. The statements which have been published upon this subject are so entirely unfounded, that the real fact is that complaints of the conduct of the crew towards passengers are entirely unknown and unheard of. Owing to the confined space on board ship, the passengers are necessarily thrown much together on the voyage; but the proceedings of all are from that circumstance so subject to observation that there is the most ample check upon any attempt at improper conduct. The passengers are under constant supervision, and every opportunity is given for complaint. There is not the least danger of contamination to the female passenger. She is just as safe on board as if she were in her own village.

Beyond the careful separation of the sexes, the protection of women, and the due maintenance of discipline amongst the passengers, it is impossible to go. There must necessarily be amongst steerage passengers a large number of people used to a rough life, and who are not very refined in their manners; and some whose moral character is not of the highest kind. It is not in the power of the shipowners to soften their manners or change their characters. Some of the correspondents whose letters have appeared in the newspapers, appear to make it a matter of complaint that this is not done, and some even seem to suppose that the shipowner is in fault for the rolling of the vessel, and the sea-sickness of the passengers.

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VENTILATION.—The emigration officers have full discretion under the

Act to require that the ventilation shall be sufficient, and that proper ventilating apparatus shall be supplied. The supply of fresh air below is plentiful, and the only difficulty which the captain has to contend with on this score is the occasional attempts made by passengers to stop up the ventilators. It should be mentioned that the air is supplied by both up and down-cast ventilators, and also by windsails ; and as there is a considerable space left between the tops of the berths and partitions and the deck above, a constant current of fresh air can by this means be kept in motion over the whole area of the sleeping apartments. It may also be stated that every day the steerage is thoroughly cleaned out and aired.

Food and Water.—The Act gives a dietary scale and provides that particulars of the food to be supplied shall be printed on the passenger's ticket, so that he can tell in a moment if he is not receiving that to which he is entitled. All the companies give food additional in amount to that required by the Act, and of a higher quality. The provisions are inspected by the emigration officer at the port of departure, who sees that they are proper both in quality and quantity. The best fresh meat, bread, and vegetables are supplied, and butter, biscuit, sugar, tea, and coffee. There is no limitation in the quantity allowed, although the Act admits of a limit. Great quantities of food being necessarily cooked together, the cooking cannot be as perfect as that in wealthy establishments on shore, but it is as good as is practicable. That the food and cooking are appreciated by the passengers, is shown by the fact that the consumption of food per head is very large. The water is of course fresh, every voyage, and there is an abundant supply. The food is served by the steerage stewards (a large staff of whom are kept), by distribution into the cans of the passengers, in somewhat the same way as is done in public institutions on shore. With so many passengers it would be impossible to adopt any other plan.

Health of Passengers.—One doctor is always carried, and when the number of passengers is large it is customary to carry two. Hospital space is provided for the accommodation of passengers who are ill, and proper medical stores and comforts are carried on every voyage. Cases of illness on board are rare. The captain and doctor attend daily in the steerage. No epidemic has occured on board of any of the steamers of the Atlantic Lines since 1865, although from that year to the present time they have carried nearly 1,500,000 passengers. The death-rate last year among emigrants carried in these steamers was less than 15 per 1000 per annum ; that is, taking the average length of the voyage at twelve days, and assuming that the passengers passed the whole year at sea, the

whole rate of mortality would be as above-mentioned. This is a much lower rate than that prevailing in large towns or even in country places. When it is remembered how many of the emigrants are women, children, and old people, this low death-rate will be found to be most important evidence of the manner in which emigrants are fed, berthed, and treated, on board the steamers of the Atlantic Lines.

INSPECTION BY GOVERNMENT SURVEYORS.—It has been said by the newspapers that the surveyors neglect their duty, and that the inspection is a sham. There is not a word of truth in this statement. The duties of the officers are most carefully performed. It is impossible to answer a general and vague statement of this kind more in detail, but the Emigration Board is a public department of the Government and will know what the facts are.

By the foregoing statement it has been shown that the health of the emigrant is fully provided for, that the female passengers are properly cared for and protected, and that comfort and convenience appropriate to the reasonable requirements of the passengers, and to that to which they are accustomed on shore, are supplied. The passengers are carried across the Atlantic, a distance of three thousand miles, in ten or twelve days, at a higher rate of speed, and in larger and finer steamers, than are to be found in any other mercantile service in the world, vessels which are most costly both to build and to work, and which have to be kept in the highest state of efficiency. They are so carried in almost perfect safety (casualties being almost unknown), and at a very cheap rate.

The rest is a matter of demand and supply. If the public who now travel in the steerage are willing to pay more, they can have more space at their disposal, more elaborate cooking, and luxuries of every description, by taking their passage in the cabin; or second class accommodation can be provided for them, if they choose to pay for it. But as a body they do not care for luxury and are not willing to purchase it. They want to get across the Atlantic as cheaply and rapidly as they can, and as long as they are well fed, properly treated, and their health cared for on the passage, they ask for no more. If additional space and luxuries are provided, the price of the steerage must be increased and emigration must be diminished. It is for the steerage passengers to make their own choice in the matter. It is a mistake to suppose that all such passengers are emigrants; or that all emigrants are ignorant and helpless people who do not know their rights, or anything of the voyage across the Atlantic. Many steerage passengers have crossed several times, and are perfectly aware of what is due to them, and would strongly resent treatment which fell short of that to which they are entitled. A very large number of

emigrants have received from their friends in America pre-paid tickets and full information about the voyage, and what they consider as the best steamer to cross in, so that they have the benefit of the experience of those interested in their welfare. There is great competition amongst the Atlantic Lines, and if any one of them were to neglect the comfort of its passengers in the way which has been supposed, it would at once suffer severely from that cause. There can be little doubt that the emigrant class is satisfied with the present arrangements. Occasionally there may be a grumbler who would grumble under any circumstances or a sea-lawyer who would practice his vocation anywhere. These are found, however, as often in the cabin as in the steerage,

Again, when persons who are used to luxurious living on shore, and who ought to travel as cabin passengers, choose to go in the steerage, they must expect to encounter something different from that to which they are accustomed. It is impossible to satisfy an "amateur emigrant," But complaints from ordinary steerage passengers, whether emigrants or not, are extremely rare. It is not denied that stewards may sometimes neglect their duty; that, in the difficulty of dealing with large numbers of passengers, discomforts may sometimes arise; or that some just cause of complaint may occasionally occur. But this is inevitable.

The companies, however, do all that they can to prevent everything of the kind. They make careful regulations to secure the comfort of their passengers, and give strict orders for the carrying of them out. They do their utmost to see that those regulations are obeyed, and are ready to punish any breach of them, and to enquire into any reasonable complaint. If complaints are, as has already been stated, exceedingly rare—notwithstanding the opportunities that are offered on the ship, and by the presence of Government officers amongst the passengers at the ports of departure and arrival, ready and anxious to enquire into any grievance, and notwithstanding the information which the steerage passenger derives from his contract ticket, and the advertisement of the company as to his rights—it may surely be assumed that, as a general rule, and in the vast majority of cases, there is no just ground for discontent of any kind.

The Atlantic Lines believe this to be the case. They are, however, desirous of making every improvement in their power, and do not pretend that perfection is yet reached; but they maintain that their conduct bas been most unjustly represented, and that the public has been entirely misinformed upon the subject by the statements contained in the Press. It is to their interest to make their psssengers comfortable; competition is severe amongst them, and they vie with each other in attempts to do so. They are most anxious to succeed, not only for the sake of their own prosperity, but because they are desirous of conducting their business in a fair and liberal spirit, to do

their duty towards the emigrant, and provide for his comfort and well-being as much as possible.

(Signed)

THE BRITISH AND NORTH AMERICAN ROYAL MAIL STEAM PACKET CO.
THE LIVERPOOL, NEW YORK, AND PHILADELPHIA STEAM SHIP CO.
THE MONTREAL OCEAN STEAM SHIP CO.
THE NATIONAL STEAM SHIP CO.
THE ANCHOR LINE OF GLASGOW.
THE LIVERPOOL AND GREAT WESTERN STEAM CO.
THE WHITE STAR LINE.

Liverpool, *November*, 1872.

We have great pleasure in publishing the above, because we believe it will have the effect of establishing, beyond a doubt, how utterly unfounded are the charges that have been preferred against the Liverpool steamers. Those charges, which are now so fully answered, bear on the face of them evidence of malice or interested motives. It is to be much regretted that the *Times* should have reproduced and given sanction, and a certain amount of respectability, to the scurrilous article extracted from the *Toronto Globe*. It is still more to be regretted that the *Times* reproduced the article long after date, and when the whole matter had been forgotten. By doing so, the leading journal caused the dispute to be renewed with increased bitterness, when every one of the charges made had been shown to be perfectly groundless.

The steam ships of Great Britain have carried on the emigrant trade with the United States for many years without a shadow of complaint being made against them; but now foreign lines are coming into the trade, and our shipowners regard these anonymous attacks on them as nothing more nor less than advertisements for opposition lines. In this they are right, for we learn not only that the comments of the British Press on British shipping have been translated and disseminated to the prejudice of British shipping, but that they have actually been used as political capital.

Foreigners don't understand English abuse of English things. When the public Press abuses the nation at large it is bad enough; but when it takes upon itself to single out for abuse and attacks a single industry or a single branch of that industry, the effect is worse, as the attack appears to have foundation in ascertained fact. We are satisfied that if those who have gone out of their way to attack a section of British shipowners knew as we do how groundless are the accusations made, and how prejudicial has been the attack to British interests, they would have inquired first and have written afterwards.

ANCIENT TURRET-SHIPS AND ROYAL YACHTS.

Both in ancient and modern times attempts have been made to discover the origin of shipbuilding, and to attach the credit of the invention, if not to any one individual, at all events to some particular nation. These attempts have invariably proved fruitless, for the majority of early writers on the subject, whilst they are able to speak with apparent precision of the stage of development at which the art had arrived during their own lifetimes, were in the habit of accepting such widely different traditions as to its rise and progress, that their accounts, for the most part, must be considered as poetical fancies and curious fables. Thus Bacchus, Janus, Jason, Perseus, Theseus, Cadmus, Minerva, Hercules, and Neptune, in ancient mythology, have each been accredited with the honour of having been the inventors of ships, and the originators of navigation by the poets, whilst more sober historians have sought to prove that the Tyrians, Phœnicians, Egyptians, and even the early inhabitants of the British Isles, were the first to "do their business in great waters." That the Phœnicians attained a very considerable and a very early excellence in shipbuilding and sea-craft there can be little doubt, for Job, who lived about A.M. 2400, mentions the fact of their bringing gold and precious stones from Ophir to Arabia, and as the Argonautic expedition in search of the Colchian goldfields was not fitted out until three centuries later, A.M. 2700, Jason, who commanded it, and who for that reason alone was considered as the first navigator, has his claims shattered at once.

Sesostris, King of Egypt, who lived A.M. 2539, is said to have maintained a powerful fleet of 400 ships on the Red Sea, and his brother Armaus, whom he had dethroned, and who lived about A.M. 2470, greatly advanced the science, but was far from being its inventor, for Philostratus says that another Prince, named Erytheus, who some suppose to have been Esau, had, about the year of the world 2220, swept the Egyptians from off the Red Sea, and held it against all comers.

At the fortification of Troy, which is believed to have taken place about A.M. 2674, an Egyptian chieftain, named Rameses, assisted. He had sailed thither from his native country in a ship, and was one of those personages who was subsequently deified as Neptune. Yet this sea god himself was not, as we have shown, the first who had roamed freely upon his own territories; and, indeed, it seems probable that shipbuilding was understood and navigation practiced at a yet earlier period than any of those that have been here mentioned, when these sciences would appear to have made considerable progress.

The oldest vessel or ship of which we have any account is, of course, the Ark. Although this was built in obedience to the Divine commands, it is nowhere said to have been constructed by other than human hands and skill, and the principal builders being also the survivors, the knowledge would be transmitted to their posterity that it was possible to float with safety on the water in a properly constructed vessel, and this knowledge would in all probability have been turned to account so soon as the increasing population of the world rendered it expedient. It does not, however, appear necessary to suppose that to any particular person or people can be attributed what is termed the *invention* of an art or science which is likely to have had many different and independent origins. Some ancient writers alleged that the flight of a bird or the form and motion of a fish had first been the means of suggesting the idea of a boat or ship, but even simpler objects than these might have led men to improvise some rough means of passing over deep water dryshod and in safety. A tree that has fallen from a river's bank is hurried across to the opposite side by the wind's action upon the leaves and branches that are not submerged—you have here the first crude idea of a boat and sail—and when we learn that the early Egyptians, in spite of their natural dread of the sea, built boats of glazed earthenware, covered with papyrus reeds, in which they navigated not only the Nile but the rough waters of the Red Sea, and a few years later are found possessed of superb wooden galleys, some idea may be formed of the rapidity with which the art of shipbuilding was developed from the smallest beginnings among nations whose position rendered it necessary for them to become maritime powers.

Whilst the ancients have left us countless monuments of their genius, their taste and their skill, in all kinds of architecture where stone was available, their vessels, from the perishable nature of their materials, have not survived to afford us the gratification of judging of them in a similar manner, and it is upon the accounts of ancient authors that we must mainly depend when attempting to form some idea of what these structures were like. It is true that some centuries back a vessel or galley, which has since been called Trajan's ship, was discovered in the Puccia Lake, near Florence, and was raised by order of one of the Colonnas. It was found that she was in an excellent state of preservation, but in point of size she was nothing extraordinary, and in no way to be compared with the ships of far more ancient date. Hiero, King of Syracuse, who commenced to reign in the year 268 B.C., commissioned Archimedes, who, by the way, was a relative of his, to build a ship the like of which had never before been seen, and most punctually were his commands obeyed by the great engineer. Timber in sufficient quantities to have built sixty ordinary triremes was collected from various parts of the then-known

world, and three hundred of the most skilful workmen that could be obtained, besides a vast number of ordinary labourers, were employed upon the gigantic work, under the supervision of one Archtas. Owing to the immense proportions of this sea monster, it was originally intended to build and launch her in separate halves, but Archimedes had invented his famous screw during the progress of the work, and the two parts having been joined by means of immense bolts—the smallest weighing six pounds and others as much as thirty-six pounds—she was committed to the deep by means of this new and powerful machine. Twenty banks of oars on each side swept this extraordinary structure through the water, but sail could also be made on her for she had three masts of enormous size, of which the largest, it is said, was specially sent for to Britain—just as some years back it was necessary to send to New Zealand for three gigantic Kauri pines out of which to form the tapering masts of the Royal yacht, the *Victoria and Albert*. It is, however, from the interior arrangements of King Hiero's vessel, as described by Atheneus, that an idea of her immense capacity must be formed. In addition to the magnificent banqueting halls and sleeping apartments for persons of rank, the most extensive and elaborate accommodation was provided for the seamen and soldiers, as well as separate quarters for the married couples. Upon the floors of these rooms were represented the whole fables of the "Iliad" in stones of various colours, inlaid with the most exquisite artistic skill. One hall, probably the most beautiful of all, was paved entirely with agate and costly Sicilian stone. The roof was of cypress, and its doors of cedar embellished with pictures and carvings, whilst around the interior were ranged marvellously executed groups of statuary. There was a *scholastria* and a library furnished with couches of boxwood. There were hot baths supplied from three enormous copper boilers; there were stables for many horses; fishponds where fish ready for consumption were kept; watertanks holding many thousands of gallons of fresh water; gardens in a high state of cultivation, watered by artificial rivulets; besides kitchens, bakehouses, and other offices. The outside of this extraordinary vessel was adorned with marble statues and furnished with galleries. Eight massive turrets rose from the deck, and these were pierced with embrasures and garrisoned with fighting men with bows for their weapons. Besides these turrets there stood on the poop a tripod catapult, the invention of Archimedes. This formidable war-machine was capable of hurling a massive stone, weighing three hundred-weight, a distance of six hundred paces, besides discharging arrows twelve yards long. Across the masts hung huge yards, and from their heights masses of lead and heavy stones were launched upon the decks of an antagonist, and grappling-irons thrown to entangle her rigging. Round the vessel was a rampart or wall of solid iron as a defence against

the assaults of boarders. The tops, as the curiously-wrought baskets which surmounted each mast may be called, were filled with men whose duty it was to rain down stones on the heads of their enemies. Four wooden and eight iron anchors were required to hold in security this strange specimen of naval architecture, which must have been more hideous than even a modern turret iron-clad, and more luxurious in her interior than a Cowes yacht. King Hiero not having in his kingdom a port sufficiently large to hold this unwieldly ship, sent her as a present to Ptolemy, who anchored her in the spacious harbour of Alexandria where she could "swing" with safety.

Ptolemy IV., King of Egypt, usually known as Ptolemy *Philopator*, constructed a ship, which was two hundred and eighty cubits in length, thirty-eight cubits in "beam," forty-eight cubits from the upper deck to the bottom of the hold, and fifty-three cubits from the water-line to the top of the poop-balustrades. Assuming the cubit to have been about eighteen inches, this would give her a length of four hundred and twenty feet, a width of fifty-seven feet, and a burden of upwards of six thousand tons, according to what is termed now "builders' old measurement." Her dimensions were little less than those of the Ark, which it will be remembered was "three hundred cubits, the breadth of it fifty cubits, and the height of it thirty cubits," but almost exactly the same as the broadside iron-clads of the *Warrior* class—the "over-all" length of the latter ship being also four hundred and twenty feet, her breadth fifty-eight feet, and her burden six thousand and fifty tons. Some of the bolts used in Philopator's vessel were thirty cubits in length. She had a double bow, and a double poop, with seven "beaks," one, however, more prominent and heavier than the rest. The poop oars were thirty-eight cubits long, and her complement of men consisted of four thousand oarsmen, three thousand soldiers, and four hundred seamen. Materials sufficient to have built fifty vessels of five "banks" of oars each, were exhausted, and, when completed, she was launched on rollers into a paved channel, that had been formed to receive her, and thus reached the sea, amidst the festive rejoicings of multitudes. Her oars were very beautifully carved, and, amongst other ornaments, immense scupltured figures of animals were conspicuous on her hull.

The same King, whose principal hobby appears to have been ship-building, launched another remarkable craft, which he designed as a nuptial barge, and for that reason, she was called the *Thalamegon*. She was about three hundred and twelve feet in length, and forty-five in breadth. Although not intended for sea-service, her poop was raised to a considerable height, in order that the buffetting of the Nile waves, which occasionally ran high, might be avoided. Round this ship there

was a magnificently decorated and spacious gallery, supported upon elegant columns. The vestibule was built almost entirely of ivory, and the other chambers of cypress and cedar, inlaid with the same costly substance. The rings, handles, and knockers of the doors were painted red and gold. The columns had cypress-wood bases, and Corinthian capitals of gold and ivory, whilst the roofs of the refectory and other chambers were of carved cypress, gilded. This superb vessel contained a temple of Venus, in which stood a marble statue of the goddess, a Bacchic hall, ornamented with dragons, griffins, and other fabulous animals, carved in wood and stone, besides the statues of the royal family of Egypt. When favourable winds were to be taken advantage of, sails of purple hue were hoisted, and all the cordage by which they were worked was of the same gorgeous colour. Her masts were upwards of one hundred feet in height. Philopator's extravagance in shipbuilding, besides other practices of a less harmless character, which he chose to adopt, dissipated the wealth accumulated by his ancestors, and at last brought him to grief. Atheneus calls him a dissolute "flute-player," and hints that he was a coward as well.

Sesostris, whose reign is supposed to have commenced *Anno Mundi* 2589, is reported to have built a ship four hundred feet in length, covered inside with silver and outside with gold, and to have presented it as an offering to the god of Thebes.

Cleopatra's ship, in which she performed her memorable voyage to meet Antony and answer the charges brought against her of assisting his enemies, must have been a most magnificent one. Her stern was golden, and the oars, which kept time to soft music as she swept down the River Cydnus, were of ivory. Plentarch says that the Queen, in the dress and character of Venus, lay under a canopy embroidered with gold of the most exquisite workmanship, while boys, as painted cupids, stood on either side to fan her. Her maids, who were of the most distinguished beauty, were habited as the nereids and graces, and assisted in the steering and conduct of the vessel.

Maximus Tyrius gives a description of a ship built by a Phœnician monarch, in which the latter made a voyage to Troy. Superbly fitted up in all ordinary respects, this vessel appears to have had gardens on board and many kinds of fruit-bearing trees. She was painted different colours, and glittered with the gold and silver that had been lavishly expended on her decoration.

Silius-Italicus writes of a ship in the Carthagenian fleet which was propelled by four hundred oars. This immense vessel was one of a fleet sent against Syracuse, and was famous not only for her size, but for her extraordinary speed "under canvas."

The ships built under the orders of Caligula were amongst the most

magnificent of ancient days. Gold and precious stones blazed upon their ornamented poops. Silken ropes worked their sails, and, as in other instances that have been mentioned, gardens with lovely flowers and delicious fruits found a place upon their spacious decks. Caligula himself oftentimes ran round the Italian coasts in one of these splendid yachts, which, in point of size, however, were inferior to the vessel built by the same Emperor for the purpose of carrying an immense obelisk from Egypt to Rome. This was said to have been the largest ship ever seen up to Pliny's time. Her mainmast was of such a size that four men could scarcely encircle it with outstretched arms. Supposing a man to span thus, 5 ft. 8 in., a diameter of about seven feet would be arrived at, and no mainmast ever turned out of a modern dockyard ever reached that extraordinary size.

The ancients apparently were thoroughly alive to the necessity of sheathing their ships. Trajan's ship to which we have before alluded, was covered with lead as high as the water line, and this lead was fastened with small and neat copper tacks to avoid corrosion. Caulking was also practised, much as it is now, in the time of Pliny, who says it was usual to use the coarser outside portions of the flax plant, beaten and pounded to free them from gum and loosen the fibres. Trajan's ship was caulked with linen rags, and the caulking had lasted over 1,800 years.

It will not be out of place to refer here to the disputed question of the "banks" of oars which are referred to so frequently by ancient authors when describing their gallies. Modern exponents of the puzzle have not been wanting who have sought to show that these "banks" were merely rows of oars ranged in vertical tiers one above the other. So long as the number of rows or tiers did not exceed three, or at the most four, this might be understood, but when *forty* rows are spoken of, it is evident some other explanation must be sought for, for it is utterly impossible to suppose that any oars could be worked at all that were long enough to stretch from even the tenth row to the water, so as to clear the blades of the nine lower tiers at work beneath. The simplest explanation, and the one now most generally adopted, is that these "banks" were nothing more than groups of oars which were worked out of the *Columvaria* or ports, which were formed at regular intervals in the galley's side, and whose number depended not on the *height* but on the *length* of the vessel. It is usually supposed that these openings, which each afforded room for perhaps half-a-dozen oars to work, were arranged in much the same manner as the gun-ports of a modern line-of-battle ship; that is to say, supposing the galley to pull three vertical rows of oars, the ports or *Columvaria* of the *highest* tier were placed immediately over those of the *lowest*, whilst those of the middle tier were between

them; and this arrangement was probably as necessary in order to avoid any undue weakening of the ship's side as to allow room in the water for the play of the oars.

THE "ROYAL ADELAIDE."

On the afternoon of Monday, the 25th of November, the coastguard men at Portland received a telegram from the station at Lyme, warning them to be on the alert, as a vessel had been seen in imminent danger beating about the West Bay, endeavouring to weather Portland Bill and take refuge under the shelter of the breakwater. This vessel proved to be the *Royal Adelaide*, an iron clipper of 1,320 tons burden, built at Bristol in 1864, bound for Sydney, commanded by Captain Hunter, with a crew of thirty-two hands, and carrying on board about thirty-five passengers and a large cargo of general merchandise. On receipt of the telegram, the Portland and Wyke coastguard men, who had already during the early part of the day observed the position of the vessel, mustered on the beach with the Board of Trade rocket apparatus ready for immediate use. The wind was blowing a heavy gale from the S.W., and a terrible sea was breaking on the dangerous Chesil Beach. To seaward lay a dense fog, which ever and anon lifted, showing the doomed vessel battling with the storm. To the skilled eyes of those on shore it was evident from the first that nothing but a change of wind could save the vessel; and as darkness set in, and her impending doom became more and more imminent, signal lights were burned in Chesil Cove to indicate to the master the spot where the surf was least powerful, and where he could with least danger beach his vessel. But it soon became apparent that she could not be kept off shore sufficiently long to enable her to reach the cove, and the coastguard proceeded with the rocket apparatus along the beach to meet her. By the time they came up to her, about a mile and a-half from the cove, she had been carried so close in shore that there was no room to wear, and the captain ordered the anchors to be let go. This checked the vessel for a moment, though she never rode, but was swept through the boiling surf broadside on to the beach, and as each wave receded she was left for an instant almost high and dry, only the next moment to be overwhelmed by a mountain of sea. It was a terrible sight, the noble ship tossed from side to side, her masts now buried in the waves, now overhanging the heads of those on shore; the anxious faces of women and children watching with eager gaze from the poop the measures taken for their safety, the whole scene illuminated by the glare

of the burning blue lights which always accompany the rocket gear. Before the rocket apparatus could be got in readiness to fire, a man, the first mate, was seen to let himself down from the poop with a rope attached to his body, with the evident intention of forming a communication with the land. He was proceeding in his bravery to certain destruction. The irresistible undertow on the Chesil Beach renders all such efforts fatal, and the spectators knowing this of old shouted to him to refrain. He did not; the brave fellow took no heed of the warning, but plunged into the surf, and at the same moment the vessel lurched towards the beach, went over him, and he was no more seen. By this time, however, a rope, thrown by hand had been seized and a connection effected, and soon, by means of the gear of the rocket apparatus, "Kisbee's Breeches," a messenger of hope and safety was speeding between shore and ship. It demanded no small courage, more especially on the part of the women and children, of whom there were many on board, to leave the ship, a place of present safety, to climb over the poop whilst the vessel tossed like a mad thing, to trust themselves alone in the "breeches," and to be hauled down the yawning gulf and into the raging surf; yet all this had to be faced ere the shore could be reached. The first to venture was a man of colour, who was induced to go by the captain to prove the safety of the apparatus, and who was safely landed amidst the cheers of all assembled. Next came a woman, who, unfortunately, after having been safely placed in the buoy which encircles the "breeches," clutched and held fast to some of the ship's gear, and when the coastguard ashore began to haul on the whip she was dragged out of the buoy and left hanging to the ship's side. But for a moment she hung, and then, with a piercing shriek, heard above the roar of the wind and sea, she dropped into the surf, and disappeared under the ship. The fate of this poor woman seemed to strike terror into the rest of the passengers, and for a space the "breeches" buoy hung empty by the ship's side. Then a man emerged from the crowd, climbed the poop, and taking a child in his arms placed himself within the buoy and was quickly pulled on shore. The success of this attempt inspired courage in the rest of those on board, who one by one got into the "breeches" buoy, and, with the exception of two, who were unfortunately washed away, reached the shore in safety. One touching incident was afforded by a little girl, about ten years of age: before trusting herself on the perilous journey, kneeling down on the storm-tossed deck and praying for her own safety and for the safety of her mother, and her little brothers and sisters who were to follow her along the thin whip in the buoy. Whilst the passengers were thus escaping by the poop, a rocket had been fired across the braces of the mizen mast, and the services of a second apparatus and "breeches" buoy were brought into use, by which several of the sailors were hauled

on shore. At length only three persons were left on board, an old woman of eighty, who steadily refused to allow herself to be placed in the buoy; a child about ten years of age; and a man of gigantic size. This man had magnanimously determined that he would be the last to leave the ship, lest by his immense weight he should break the whip along which the "breeches" buoy travelled. (There had been no opportunity of setting up the strong hawser on which the buoy is meant to travel, and the thin whip or hauling-line had been made to do duty for both whip and hawser.) He had been seen expostulating with the old woman, who evidently remained firm to her resolve, so taking the little child in his arms the gallant fellow got into the buoy. As he did so a mighty sea struck the vessel, she swayed round, the worn and overstrained whip parted, and the man and child were lost. Meanwhile the vessel had been rapidly breaking up, the iron masts had one by one gone by the board and the ship's back had broken with a report like the discharge of a battery of artillery. There was one little defect in using the apparatus that led to the loss of one or two lives, which we will not mention here, as it will, we are satisfied, form the subject of investigation by the Board of Trade Inspector.

Down to the time of the breaking up of the ship the conduct of all on shore had been exemplary, the coolness, courage, and efficiency of the coastguard calling more especially for commendation. Would that we could say the same of all that subsequently took place, or draw a veil over the disgraceful scenes that followed. But the truth must be told, even if in telling it we are forced to admit that Englishmen and English women on their own shores, and in the year 1872, behaved themselves (at a time when all their finer qualities ought to have shone forth) in a manner that would be deemed brutal on the part of Esquimaux or Fuegans. A large part of the cargo consisted of rum and schnapps, and as barrels and cases of these were washed on shore they were eagerly seized by the crowd, and either at once stolen, carried away, or then and there broken open and their contents drunk off. The duty of protecting the property was to a great extent performed by the deputy receiver of wreck at Weymouth, who, with the aid of the coastguard and parties of marines, and of the 77th Regiment, succeeded in salving a large portion of what came to land, but as the night wore on, and the number of drunken and evil-disposed persons increased, and as the organisation for protection was not perfect, the cargo, which was strewn for miles along the beach, became an easy and inviting prey. So the night passed, and one witness stated at the inquest held on the body of one of those who died from the effects of drink, that among the thousands on the beach at twelve o'clock that night there were not twenty sober men. Morning brought a sight which baffles all description. Along the shore lay scores

of men dead, or in a drunken stupor, and many a house in Weymouth and Portland now laments the loss of father, husband, or brother, killed by their own excess.

Such was the wreck of the *Royal Adelaide*, a vessel of which nothing remains but a small portion of the iron stern, round which the placid sea now plays and smiles.

Since this was written the Board of Trade have ordered an inquiry. What the result of that inquiry is we do not know, but we do know that for our national credit energetic measures are called for, to ensure that steps are taken in future to prevent public debauchery, gross outrages, and open theft, on such appalling occasions as wrecks on the shores of the United Kingdom.

WRECK OF THE "MARIA;" OR, ADVENTURES OF THE NEW GUINEA PROSPECTING EXPEDITION.

(Continued from our November Number.)

THE next morning we had another meal of Moreton Bay chesnuts; they gave us plenty of it, but it is very unpalatable. We shifted down to the beach and reclined under a large spreading tree. None of the blacks went away for food, as they had plenty of the white stuff with them. Coyle and I this morning ate a handful each of a kind of bean which grew in large quantities along the shore; we noticed that the blacks did not eat it, but were not warned by this. However, we suffered for our temerity, for, after the space of about two hours, we were both taken very ill, with violent pains in the stomach, and vomited a great deal. About midday the blacks drew our attention to a small vessel sailing to the northward. We made a large fire, and put green bushes on it to make a thick smoke, but the weather was very squally, and she passed without seeing us. We afterwards heard that it was the *Coquette*, a cutter from Cardwell. Soon after she had passed out of sight, we were joined by our four companions; they had also seen the sail, and done everything in their power to attract attention, but without success. We slept that night in some gunyahs on the beach, the blacks going to their camp in the bush. In the morning they rejoined us, and crowded into our huts, as it was raining heavily. They succeeded in stealing two of Ingham's shirts (he had three) and then made off. Later in the day we were surprised to see Bardon and Siddell approaching us along the beach,

the former was looking very ill. We were very glad to see them alive, for we had given them up as lost, not having seen them since we landed, and feeling sure they had not crossed the river which had barred our southward journey; nevertheless, we censured their conduct in having left us without telling us of their intentions. About an hour before sunset, some of the blacks motioned to Coyle and me to come with them. We did so, and were followed by the remainder of our party. Crossing a small river which empties itself immediately south of Cooper's Point, we began climbing that rocky promontory. The blacks went up the rocks like monkeys; even the gins, with their babies on their shoulders, seemed to have no difficulty, but we, in our disabled condition, got on very slowly. We shouted to Smith, Ingham, Bardon, and Siddell, who had not yet crossed the river, to go back, as we thought the path was too steep for them. They did so, and Haydon, Phillips, Coyle, and I went on with the blacks. They were soon all out of sight but one, who stayed to escort us. This was the worst ground we had been over as yet, the path for upwards of a mile, being up and down rocks, varied occasionally by short stretches of sand, but, unfortunately for us, these were few and far between. The rocks on this coast are all apparently of volcanic origin, which accounts for the richness of the soil and the luxuriance of the vegetation, but they are singularly devoid of shellfish of any kind; it was only in places that oysters, or even periwinkles were to be found, and the few that we saw were extremely small. About sunset we had left the last of the rocks behind us, and, passing a small camp on the beach, were conducted a short distance into the bush to another; this was the largest we had yet seen, and consisted of about a dozen huts, some of them very large and comfortable. On reaching it an old fellow with a broken nose came out to meet us; he was a pleasant-looking old chap, and seemed very glad to see us. He took possession of Coyle and myself, and led us into a hut newly thatched and the floor was strewn with fresh grass. We were not sorry to see such comfortable quarters, as it had rained a good deal during the day and there was every appearance of a wet night. When we were seated by the fire they brought us bananas and yams, and the old man produced some small cockles and proceeded to roast them. The bananas were in appearance like the kind known as the sugar banana, but they are full of black seeds; there is another kind growing in this district, like the plantain, but much smaller, also full of seeds. After we had eaten these, we were taken out and formally presented to a number of strange blacks who were just returning to camp; they embraced us cordially and appeared pleased to see us. After this introduction we returned to our hut, and spent one of the most enjoyable nights we had yet experienced.

The next morning it was still showery. After breakfast, Coyle went with some of the blacks a short distance into the bush to get fruit; they came back with some of a bright green colour, about the size of a large plum; the flesh is yellow, with four or five black seeds in the middle. The blacks roast it and eat it hot, but, when perfectly ripe, is very good raw; it has a slight bitter flavour.

The tree which bears this fruit is very handsome, and grows in dense scrub on the sides of ranges. This scrub is, in some places, quite impenetrable, being composed of vines and creepers, and several kinds of canes, some covered with thorns. These reach the tops of the highest trees; it is impossible to force your way through them without cutting them. The trees themselves were, for the most part, quite unknown to me; some of them are very beautiful. I noticed but one species of Eucalyptus, very scarce. Another strange circumstance was the absence of animal life in this region; we saw no traces of any large animal but native dogs, the footprints of which we occasionally saw on the sand, and the remains of two large rats. There was not even an opossum or iguana, and we only saw one snake: that the blacks had killed; we hoped to have some of it for supper, but were disappointed.

In the afternoon we went to the beach with the blacks, it was then low tide; they went into the sea, and began groping in the sand looking for cockles; when the tide rose, they came out of the water, and making fires, began to cook their spoil. After eating a good many, we went back to the camp, had a few more cockles, and went to bed, but not to sleep, for one of the blacks being musically inclined, gave us a song; it was a long one; he sang the first part in our hut; it occupied him several hours. He then adjourned to the hut in which Phillips was located, and went on with it for his edification till daylight; he accompanied his voice by beating two sticks together. Coyle had had a good deal of pain in the big toe of his right foot for two or three days before this, and it now began to show signs of inflammation, and became so painful that he could scarcely walk.

We were awakened at daylight next morning by a great commotion in the camp, and a loud shouting and jabbering. On looking out we saw some of the blacks rushing wildly about; two of them had spears in their hands, each of these were struggling with another, whose intention evidently was to prevent their fighting. Several spears were broken in their struggles; and they afterwards seized their wooden swords and shields, but were still restrained by the others. After a considerable time they appeared to be pacified, and returned quietly to their huts, and the noise subsided. We were now able to ask for our breakfast; they brought us a few of the green fruit, but very little, as they seldom keep much food until next day, except in the family gunyahs,

where there is generally some put by for the children in the morning. The little fellows were very good to us, generally bringing us half of what they had.

As usual, we were unsatisfied, and, on asking for more, one of the blacks motioned me to follow him. I did so, and afterwards found that some others were bringing Phillips in the same direction; they led us to the beach, and along it for about a mile, when we came to another small river, which we were unable then to cross, as it was high tide. Our escort swam it, and we waited two or three hours, when one of them returned and led us over; the water was up to our waists, and the current pretty strong, but our friend gave us the end of his spear to hold and we got over safely. He led us to where other blacks were cooking some food. We fared very well, for they had yams, bananas, fern roots, and some small crabs. Meanwhile, some more of them were employed fishing for shrimps; they did not get many, but these were a pleasant addition to our banquet. The blacks then left us, with the exception of one man and a boy, who remained to take care of us. This man had a small palm-leaf parcel, which we had been curiously observing for some time. He now took hold of it, and led us a short distance to some rocks. He then carefully washed out a small hollow in the stone, and filling it with fresh water, opened his parcel. What was our surprise when we saw that it contained a nest of ants and ants' eggs, as they are commonly called; they are, however, really pupae or chysalides. He emptied them into a basket, and commenced mashing them with his hand, letting the juice run through into the pool of water. When he had expressed all the moisture, he began eating the dry mass left in the basket, giving us all a share. When we had finished this, we began to drink the water, which was as white as milk. This preparation had a very pleasant flavour, with a slight acid, somewhat resembling lime juice, and had evidently been reserved to the last as a great delicacy. These ants are of a pale green colour, about half an inch long, and stingless: they are, I think, found in dead wood. After our repast was concluded, we went to a large hut near the mouth of the river, and made ourselves comfortable for the night.

This was a family camp, most of the blacks having gone to another in the bush. With us there were only two men, two or three women, and six or seven children. We always found that we were far better fed under these circumstances. The gins and piccaninnies were very kind, giving us plenty to eat.

Soon after breakfast, next morning, Haydon appeared on the opposite bank of the river, accompanied by some blacks. They left him there till the tide was low enough for him to cross, when one of them went back for him.

We passed the day in much the same way as the previous one, faring just as well, but in the evening were conducted to a hut in the bush, about two hundred yards from the beach. This was the largest we had seen; it had three entrances, and was about seven feet high in the middle. There were three fires in it, and about twenty occupants; we were rather crowded, but, as it was a wet night, were very glad of the shelter.

On the following day we decided to leave our good quarters, and go back to see how Coyle was getting on. We stopped at our friends' hut on the beach, to wait for low tide. While there, the women and children caught some small fish that had been left by the tide in a shallow pool. We had a good meal of them, eating them whole, after roasting them on the coals. In the evening we crossed the creek, escorted by a larger number of blacks. We, however, made signs that we did not want them, and they went back. When we had reached the camp where we had left Coyle, we found it almost deserted, there being now only a few blacks and their families there. Our four companions, whom we had left south of Point Cooper, had arrived shortly before we did, and stated that Smith and Ingham had been maltreated by the blacks. We were rather puzzled to account for this, as we had received nothing but kindness at their hands. The only solution I could arrive at was, that they had failed to understand their signs, and, consequently, had done something to displease them. As soon, however, as they had started in our direction, the blacks had left them alone. There were thus eight of us depending for support on a very small party of the natives, a burthen we had endeavoured to avoid, by distributing ourselves among them.

Fortunately, however, this evening there was no lack of food, the chief article being the fruit, or rather seeds, of a kind of ginger. These have a very pleasant, sweet taste. I have been since informed that there are fifteen species of this plant in this part of the country.

Coyle's toe had become much worse during our absence; he was suffering great pain in his foot and leg, and was scarcely able to move. He had, however, been well cared for while we were away.

We were about ten miles north of Gladys River, and five or six from where we had at first landed. The blacks appeared to be gradually shifting to the northward, apparently as the food became scarce.

On reaching the beach next morning—the morning of the 12th of March, 1872, a day ever to be remembered—I heard some blacks shouting, and, on looking at them, saw them pointing to the sea. Following their direction, I descried the masts of a vessel from six to eight miles to the northward, near the Frankland Islands. I shouted to Haydon and Phillips, who were some little distance behind, and we commenced making a fire to attract attention. Smith and Siddell soon

afterwards joined us, and after sending Siddell with the blacks to look for food, as he was too lazy to work, three of us went up the hill and made another fire. When there, we made the vessel out to be a man-of-war; we then felt sure it was the *Basilisk*, as we knew that she had been up at Cape York. After going round the Frankland Group, she steamed slowly past at a distance of three or four miles, and went out of sight round Point Cooper. We then came down the hill on to the beach where we had left Smith, Haydon meanwhile bewailing our hard fate. After about half an hour, she again appeared in sight, and anchored immediately opposite us. It was now about midday, and we anxiously watched her for another hour or so, waving our shirts and coats, when, to our unspeakable joy, we saw a small speck a little distance astern of her. This we knew must be a boat, and as soon as she came near enough to leave no doubt that she was coming in for us, we fell on our knees on the sand, and offered up thanks to God for our deliverance. Meanwhile, I had asked Phillips to go back to the camp, and bring down Coyle, Ingham, and Bardon. They arrived on the beach just as the boat grounded, and Captain Moresby and his crew jumped out and welcomed us. I should think that meeting will never be forgotten by any of us. Never did I feel such pleasure in grasping an honest English hand as at that moment. Although we had been so kindly treated by our black friends, and although we had never given up the hope of being rescued, yet, now that we were saved, I was almost unable to realise it. The thought uppermost in my mind at that moment was, that I would soon see again those who were most dear to me on earth, and who, perhaps, were thinking they would see me no more; and that in a short time they would receive intelligence of my safety: in fact, some of us would have cared little about our sojourn among the blacks, could we only have let our friends know that we were alive.

CHAPTER V.

Captain Moresby had brought ashore with him a bottle of wine; this proved a great boon to the weaker of our party; indeed, we were all glad enough to get it, though I felt at this exciting moment equal to any exertions. We tried to get the blacks to taste the wine, but they would not touch it; we then accompanied Captain Moresby to the camp, a few blacks coming with us. These poor, ignorant creatures appeared to rejoice in our joy, though expressing sorrow at our departure; they had embraced Coyle most affectionately, when he left them, on hearing of the arrival of the boat, many of them crying bitterly. After taking leave of them, we embarked on board the gig, and in about an hour reached the

Basilisk; Captain Moresby then sent back the gig with a bag of biscuit and some preserved meat, as a reward to the blacks for their kind behaviour to us. This mark of kindness they richly deserved, for in all probability we should have starved but for them. They would always, when travelling with them, give us a helping hand, or go into the bush, to get a walking-stick, if any of us were without one.

We were heartily welcomed on mounting the deck, then taken below and clothed in respectable garments, for our own had suffered considerably from the rough treatment they had undergone, and most of us had lost our hats and boots.

When our toilet was completed, we found dinner awaiting us in the ward-room, and sat down to, perhaps, the most delightful meal we had ever tasted, after which we went on deck, and indulged in a smoke, another luxury we had long been deprived of. The rest of the evening was spent in recounting our adventures, and in learning the fate of our fellow-passengers in the *Maria*.

We then heard for the first time, to our surprise, of the murder of the captain and two of his crew, by blacks at Tam O'Shanter Point, not many miles south of where we had been living on such friendly terms with others. We at first conjectured that this was because the natives with whom we had been living had had no intercourse whatever with whites; but that this was not the only reason, was proved by the subsequent discovery of the murder of seven of the poor fellows who had started on the other raft, on the southern side of the mouth of Gladys River. We had been on the northern shore of this river, on the third day after landing, but were unable to cross; we had, however, met blacks there, who treated us in the kindest possible manner; and these men were evidently in the habit of crossing, as they had both rafts and canoes. The only solution, therefore, that I can arrive at is, that the occupants of the other raft had made no attempt to conciliate them, but had endeavoured to live on their own resources; the blacks, being naturally shy, would then never make any advances, but would look upon any strangers as intruders, and, consequently, as enemies.

The smaller raft was found by the *Basilisk's* boat, under command of Lieutenant Smith, the day after we were picked up; and, lying near it, were the bodies, or rather skeletons, of two men; these had died, apparently, from exhaustion, soon after being washed ashore. Captain Moresby, meanwhile, not knowing of this discovery, as the boat had been away the previous night, had continued his search, as far as Fitzroy Island, thinking that, perhaps, the other raft, being lighter, had drifted to the north of where we were found. Seeing no signs of any white men, he returned, and steamed as far as Double Point, where he anchored, to await the return of the cutter, which came on board a little

before midnight. The next day, another search was made in the vicinity of the little raft, but no more discoveries resulted. Captain Moresby had asked me to go with Lieutenant Smith on this occasion, to try and get some information from the blacks; we succeeded in getting hold of an old man, in a canoe up the river, but could make nothing of him.

On this day, the 14th, the body of Williams had been discovered, at the entrance of Mourilyan Harbour, which is the mouth of a river, emptying itself at Double Point. He had been most cruelly murdered, and his was the only body that could be identified, and Dr. Goodman, of the *Basilisk*, was of opinion that he had not been dead more than thirty hours. The six bodies afterwards found by the *Governor Blackall* were in too advanced a stage of decomposition to be identified.

On Friday, the 15th, the *Basilisk* left Double Point, and in the evening reached Cardwell. We were at last enabled to send the intelligence of our safety to Sydney, and were informed that the *Governor Blackall*, under command of Lieutenant Gowlland, was expected the following day.

On hearing this, Captain Moresby decided to await her arrival at Cardwell, and to keep us on board till then. His kindness was fully appreciated by us, as we were in far better quarters than we could hope to find in the township, and I, for one, shall never forget the old *Basilisk* and all that were in her, both for the timely assistance rendered to us and the hospitality received on board.

On Saturday, then, we remained in Rockingham Bay, and in the afternoon Dr. Goodman and Lieutenant Mourilyan took me with them on a shooting excursion to Hinchinbrook Island; but, unfortunately, the tide was so low that we could not get close enough to the beach, and were compelled to return with only two curlews.

The *Governor Blackall* was now in sight, and while Captain Moresby and I were dining, she was reported to have anchored less than a quarter of a mile further in shore. Shortly after this she sent a boat on board. Lieutenant Gowlland was announced, and entered the cabin, and, to my great surprise and pleasure, just behind him were a number of my relations and friends. I will not attempt to describe the meeting; suffice it to say, that it was a joyous one for all of us. They declared that they were not going to let me out of their sight again, so took me back with them to the other steamer.

The next day being Sunday, Captain Moresby kindly asked me on board the *Basilisk* to be present at service, as he intended returning thanks for our merciful preservation. After this we were all shifted to our new quarters on board the *Governor Blackall*, and started with some native troopers on board to renew the search for the missing men. It was during this trip that the six bodies above mentioned were found, and

there now only remained two men unaccounted for, but no traces of them were discovered. It is quite possible, when we consider that five men were lost from the larger raft, that at least two of those on the smaller one did not reach the shore; however this may be, the exhaustive searches of Captain Moresby and Lieutenant Gowland leave no doubt that there were no living white men in the neighbourhood.

While in the vicinity of Point Cooper, a few of us went ashore with some blankets and fish-hooks, presented by Mr. Sheridan, the police magistrate of Cardwell, as a reward to the blacks for their kind treatment of us, but, unfortunately, we could not find them; evidently they had been frightened by the black troopers, who had been there the day before. However, we left the articles at their camp, and have every reason to believe that they received them eventually, as there were very recent traces of them.

After spending a week in the search we returned to Cardwell, and then taking on board the men who had gone in the boats, started for Sydney. We had a very pleasant trip down, with beautiful weather the whole way; but some of us began to feel the effects of our exposure, all being more or less attacked by fever, and many having bad ulcerated sores. Coyle's toe was now healing, but very slowly. It had been an extremely bad case, for Dr. Goodman told him that had he been another day without medical treatment, in all probability he would have lost his toe

I was struck with the beauty of the islands known as the Whitsunday Group, through which we passed on our southward journey. We entered the passage shortly before sunset, a time which greatly enhanced the beauty of the scene. These islands, picturesquely clustered, are for the most part very precipitous, while groves of lofty pines ascend the sides and cap the summits of the hills, with here and there gentle declivities clothed with grass of the richest green.

After leaving these, no objects of peculiar interest presented themselves, and the remainder of the voyage passed without any events of importance occurring. The time passed very pleasantly, the kindness of Lieutenant Gowland, and the gentlemen accompanying him, adding much to our enjoyment.

At about nine o'clock on the evening of Thursday, the 28th of March, we arrived in Sydney, greatly rejoiced to see it again: and thus ended our adventures and the New Guinea Expedition of 1872.

GREAT CIRCLE SAILING.

For about thirty-five years great circle sailing has afforded much matter for controversy, before that it had afforded food for speculation. It is fortunate for those interested in ships, that the value of great circle sailing has been settled by the test of practical application; were it not for this it is said that there are many (sailors as well as mere theorists) who would have ridden it as a hobby to the death. The great circle sailing, like many other valuable pursuits, is good in moderation, and like them also it is bad when indulged in to excess. It possesses no advantage for coasting or short sea voyages, nor for navigation in the zone, whose breadth is comprised within twenty degrees of north and south latitude. It is for long ocean voyages made in waters free from obstructions and dangers that a knowledge of great circle sailing is of value. The labour of finding a great circle course had for years prevented the elevation of great circle sailing from theory to practice, but when the result of the labours of Towson, Raper, Fisher, Godfray, Airy, and Fitzroy were published, the difficulty vanished. No sooner, however, was it once practically demonstrated and taken up, than there was every chance that it would be as greatly and seriously overdone, as its value had been even during the theoretic stage over estimated.

All the savans named above, with the exception of Godfray, used Mercator's projection; Godfray used the Gnomonic projection. Mercator's chart is certainly objectionable in one important point for great circle sailing, because the great circle that is the actual straight or true track as laid down on that chart is necessarily a curved line; and the ascertaining and tracing of that curve involves labour; at all events it involves greater labour than the mere drawing of a straight line, or plumb course between two points.

We believe that Mr. Towson's is the best of all the systems founded on the use of Mercator's charts. For this we owe Mr. Towson a debt of gratitude, and we think we are stating a fact when we say that to him also we owe the introduction of composite courses.

We are now led to refer to the subject of great circle sailing, because at the present time a chart on the central or Gnomonic projection, lately constructed by a practical navigator, W. C. Bergen, master mariner, of Blyth, Northumberland, has been brought under our special notice. A specimen of Captain Bergen's chart is inserted in our present issue. To find a great circle course on the Gnomonic projection Godfray used a diagram, and Bergen uses a protractor. A straight line drawn between any two places on Bergen's chart is a great circle course between those places.

We do not know whether we shall shock any of our readers when we say that the value of great circle sailing and its practical importance to the navigator have been greatly over estimated. It has, for instance, been stated that a thousand miles may be saved between England and Australia by great circle sailing. This is correct in theory, but in practice a great circle course would take a ship into very dangerous latitudes. It is true again, for instance, that on the track from Rio Janerio to Cape Otway 1,700 miles may be saved by great circle sailing; but, to do this, the latitude of 84° 55′ S. would have to be reached. We mention the above as illustrative of the difference between theoretical accuracy and the more limited but profitable and practical application of great circle sailing. It may become a hobby which, if ridden much, is likely to end in disaster. At the best it is but a refinement—a useful but limited refinement—of the art of navigation. It is better dispensed with altogether than carried to excess. A sailor does wisely to use it discriminately, always taking care to go on in the old well-known courses rather than to lay down and follow a great circle course that will inevitably lead him into the vicinity of floating ice, or to regions of devastating storms. As against riding great circle sailing as a hobby, we therefore advocate an acquaintance with it as a refinement and a useful accomplishment. All masters extra, for instance, ought to be possessed of a thorough knowledge of it in theory, and ought to be able to apply it, if advantageous opportunities offer, in practice. They ought also, as accomplished men, to be able to construct the Gnomonic chart, and work by it as readily as Mercator. If great circle sailing is used at all, then Captain Bergen's plan, we think, possesses many charms, and we congratulate him on the publication of his chart, which we now submit to the intelligent appreciation of our readers. In closing this necessarily short notice, we think it right to state that Captain Bergen's chart and method have met with approval from Mr. Towson, Captain Maury, Professor Airy, Admiral Smythe, Captain Toynbee, and many other scientific men of eminence. With such good names on his side, we do not fear that his charts will be taken up by advocates of great circle sailing, and will find their way speedily on board British ships, for when great circle sailing is indulged in, the navigator will find that Captain Bergen's charts afford him a ready means for laying down his course.

MADRAS CYCLONE CODE.

THE following is the substance of instructions which have been issued relating to all abnormal, barometrical temperature, and wind variations, which may indicate the likelihood, approach, prevalence, or passing away of a gale or cyclone :—

On the first observation, and during the continuance of "suspicious" or "dangerous" weather, the Government Astronomer will telegraph to his local superintendents at all outstations any observations, inquiries, directions, and warnings regarding the weather which he may consider of possible utility.

Whenever the Astronomer shall have reason to apprehend the advent of a gale or cyclone, he will at once communicate warning to the master attendant.

The Government Astronomer will communicate to the master attendant such information as may be by him obtainable regarding the inland direction and progress of any future cyclone, in order that timely warning of the apprehended danger, may, when possible, be given to the local authorities along that coast, and may by them be given to the shipping.

I. The Marine Department will enforce, as far as possible, a strict observance of the Port Rules in regard to the anchorage and berthing of ships, &c. A copy of these rules will, as heretofore, be given to every master of a vessel arriving in the roads.

II. Two sets of life-saving apparatus, complete with hawsers, &c. (but without rockets), will be kept in charge of the master attendant, who will be responsible for their being in a constant state of readiness and efficiency, for their periodical inspection, and for their boat's crews being trained to their use.

III. The master attendants at the outports on the eastern coast of this presidency will despatch by telegraph to the master attendant at Madras prompt intimation of apprehended dangerous weather, and during the prevalence of such weather will continue, when practicable, to furnish information regarding its changes.

IV. Whenever the master attendant shall have reason to apprehend the advent of dangerous weather, he will as hitherto direct the hoisting of "a white flag with a blue cross," signifying "The weather is suspicious. Prepare for running to sea."

The following arrangements will also be made :—

All officers of the Marine Department and the boat and catamaran men belonging to the Marine Establishment will be assembled and held in readiness for immediate service.

The life-saving apparatus will be ready for use either independently or in co-operation with the ordnance rocket parties.

During the prevalence of "supicious or dangerous weather" any important barometrical variations will be, by signal or otherwise, communicated to the shipping by the master attendant.

If it is decided that the shipping shall be ordered to sea, the "red flag with swallow tail," signifying "cut or slip," will be hoisted at the Marine Office. If the indication of the approach of the storm should occur after sunset, three good lights will be hoisted—one at the masthead and one at each yardarm of the master attendant's flagstaff. These signals will be repeated at the fort, and intimation thereof will be sent to the brigade major, who will in either case order seven (not an uncertain number as heretofore) guns to be fired seawards with an interval of five minutes between each gun. It is, however, open to any ship commander to put to sea before this signal is made, should he deem such a course to be prudent with regard to his own ship; and the signal is, moreover, not to be considered an imperative order.

When the master attendant deems that imminent danger of actual wreck has arisen, the "wreck signal" will be fired. This signal will be two guns fired landwards in quick succession, and twice repeated, with an interval of three minutes between each pair of guns.

The master attendant at Madras will telegraph to the master attendants at the other ports on both coasts of Southern India such warnings and indications of the progress of cyclones as may be of possible utility.

GERMAN NAUTICAL SCHOOLS.

The question of training boys for the sea is exercising the mind of German statesmen at the present moment, and we hear that more nautical schools is at present one of the wants of the North German Confederation. The *Hansa* states that the condition of the shipping trade of Schleswig-Holstein, and the circumstance that no inconsiderable portion of the seafaring population of that province has recently entered the Hamburg marine, necessitate the establishment of another class for pilots in the nautical schools of Altona and Flensburg, so that those desirous of instruction may be able to attend these institutions at different times of the year, as it suits them. Hanover having been found to be very imperfectly provided with the means of nautical education, a special school of this kind is to be organized at Papenburg, the principal shipping port of the province, and funds adequate to provide for three teachers of navigation are already forthcoming. In order, however,

that the nautical schools of Schleswig-Holstein may attain a full measure of usefulness and efficiency, it is said that new preparatory schools are required at Altona, Flensburg, and Apenrade, similar in organization to those existing in the seaport towns of the other coast provinces. An institution of the same kind is also much needed at West-Rhauderfehn, where, indeed, it has been found necessary to establish temporary classes. Provision has been made in the estimates, for this year, for four teachers for these four schools, at an average salary of 600 rix thalers, or about £90. It appears, however, that some difficulty is likely to arise in extending the North German nautical school system, in consequence of the Prussian authorities evincing a disposition to adhere to what the *Hansa* calls "the romantic principle," that it is indispensable that teachers of navigation should have actually served some time afloat, and that a course of training of this kind should, under certain circumstances, be regarded as a better qualification for a mastership in one of these new nautical schools, than a previous career as a private teacher of navigation. This, however, is a question which it seems needless to argue in general terms, as everything depends upon the respective qualifications of the individual candidates. However, other things being equal, experience in the art of teaching ought, unquestionably, to turn the scale, and this is an attainment which cannot generally be acquired at sea.

TOWAGE ON THE TYNE.

This subject has been under the consideration of the Local Marine Board of Newcastle and of the Ship Owners' Association, and is creating much uneasiness on the part of shipowners whose ships visit the Tyne. To us it appears that the proposed increase is uncalled for, unreasonable, and nothing short of gross imposition. To explain this it will be necessary to go into the subject in some detail. Prior to 1865 the tugs were all small, and it took three and sometimes more than three tugs to bring a vessel in from sea or out to sea; and each of the three tugs charged the full rate for the ship (that is, 2s. for each 13 tons reg. of the ship) for moving down the river or up the river, for one mile or less, and 1s. on 13 reg. tons more if the ship came direct in from, or went direct out to, sea. Then there were endless extortions for extras, so that the reputation and trade of the Port of Newcastle was seriously affected. To remedy this state of things the North Eastern Railway (owners of the Tyne Dock) and the River Tyne Commissioners proposed to go to Parliament

for powers to appoint tugs of their own, and to define a rate for the towage. This frightened the tug owners; and then it was agreed that 1⅞d. a reg. ton was to be the maximum rate direct from sea to any of the docks, or from the docks to sea; and these rates and this agreement were legalised by the Tyne Improvement Act, 5th May, 1865, viz., 28 & 29 Vict. chap. 274.

Things went on smoothly until in the late Tyne Improvement Act for constructing Cobledean Docks, 1872, when it was urged that the commissioners should take *Powers to increase the towage rates*, and that proposal was so shamelessly unfair that all parties rose against it, and, at last, it was agreed that the commissioners should have powers to "vary the rates of towage." So soon as this Act came into operation, the tug owners used their influence with the commissioners and commenced operations. The first act of the tug owners was to pass a resolution that the discount (10 per cent.) should be no longer allowed, as coals had risen in price. The second act was to add 2d. to the shilling on the old rates (16⅔ per cent.) and the discount of 10 per cent. They saw that they had a large majority on the commission, for there were only four shipowners upon it, and they came again in a month and asked for additional facilities to get their coals. They asked for no advance then, till a gentleman, whom we will not name, put the words into their mouths. Shortly after, at a special meeting, when only two shipowners were present, a further advance of 16⅔ per cent. was made, subject of course to the approval of the Board of Trade, making, in all, an advance of 33 per cent. The towage distance from dock to sea is not exceeding four miles. If ships are taken up beyond that, then the towage rate is unlimited and becomes a matter of bargain. The time spent from dock to sea is usually ¾ of an hour, and taking price of coals, and time, and distance, into account, the Tyne rate of towage is the *highest* any shipowner has to pay in the United Kingdom.

There are 145 tugs in all on the Tyne.

8	tugs of	45	horse-power
8	,,	40	,,
2	,,	39	,,
2	,,	38	,,
1	,,	37	,,
3	,,	36	,,

And these are the lowest power equal to the ships of the present day.

The remainder of the tugs run down from 35 to 8 horse-power, and are wholly unfit for ships of the present time. Certain members of the Commission stand out for these men. It is known that about 300 of the owners are Parliamentary voters. This may be the answer. We have heard that some of the respectable tug owners, those who own tugs fit for the work, allege that at 1⅞d. a ton the property pays well. How-

ever this may be, we can pretty well judge of the facts for ourselves. A 36 horse-power tug consumes, we are advised, 1¼ chaldrons of coals in 12 hours active steering. The previous price of coals per chaldron was 10s., and the present price is 30s. The increase is per chaldron 20s. Say, then, that the present increase of 1¼ chaldron of 12 hours is £1 5s., that is, 25s. increase on 12 hours work for coals. The towing of a ship of 1,200 tons from dock to sea, making ready, and coming back in from the sea, would not exceed three hours—that is to say, one-fourth of 25s., making an increase of expenses of coals of 6s. 3d.

This account stands thus :—

	£	s.	d.
1⅞d. a ton, old towage, on 1,200 ton ship	9	7	6
Less discount 10 per cent.	0	18	4
Late cost of towage	8	9	2
Present rate 2d. to the 1s., and no discount is on a 1,200-ton ship	10	18	9
Less increased price of coal as above	0	6	3
Present charge	10	12	6
Deduct former charge	8	9	2
Clear additional *profit* to the tugs, taking former charge from present charge	2	3	4
Proposed addition of another 2d. to the 1s. will be ...	1	11	3
Proposed additional profit	£3	14	7

OUR OFFICIAL LOG.

Smyrna.—Establishment of a British Post Office.—A British post office having been established at Smyrna, all correspondence for that place will, in future, be forwarded in closed mails, as well as by the route of France and by French mail packet as by the route of Austria and by Austrian mail packet. The rates of postage (British and foreign combined) will be as follows :—*Viâ* France and by French packet—Letters not exceeding ½ oz. in weight, 8d. ; every additional ½ oz., 8d. Newspapers, not exceeding 4 oz. in weight, 2d. ; every additional 4 oz., 2d. Book packets and patterns, not exceeding 1 oz. in weight, 1d. ; above 1 oz., and not exceeding 2 oz., 2d. ; above 2 oz., and not exceeding 4 oz., 4d. ; every additional 4 oz., 4d. *Viâ* Austria, and by Austrian

Packet—Letters not exceeding ½ oz. in weight, 5d.; every additional ½ oz., 5d. Newspapers, not exceeding 4 oz. in weight, 4d.; every additional 4 oz., 4d. Book packets and patterns, not exceeding 1 oz. in weight, 1d.; above 1 oz., and not exceeding 2 oz., 2d.; above 2 oz., and not exceeding 4 oz., 5d.; every additional 4 oz., 5d. Letters sent unpaid or insufficiently paid, will be liable to an extra charge on delivery. The postage upon newspapers, book packets, and patterns of merchandise must, in all cases, be prepaid—By command of the Postmaster-General. General Post Office, Dec. 2.

Consular Office.—The Queen has been graciously pleased to appoint Augustus Cohen, Esq., now British Consul at Cephalonia, to be Her Majesty's Vice-Consul at Surinam; and to approve of Don Francisco Yebra de San Juan as Consul at Newcastle-on-Tyne for His Majesty the King of Spain; to appoint Robert Wilkinson, Esq., now British Vice-Consul at Poti, to be Her Majesty's Vice-Consul at Port Said; to approve Don Carlos E. Soto as Consul-General for the Oriental Republic of the Uruguay; Done José Antonio de Lavalle as Consul in the Island of Hong Kong; and of Don Ricardo Espejo y Chaparro as Vice-Consul at Glasgow for His Majesty the King of Spain; and Senor John Berger Spence as Consul at Manchester for the United States of Venezuela; and to appoint Mr. Robert R. Purvis to be Her Majesty's Vice-Consul at Padang (Island of Sumatra).

Gazette Notice Circular.—The Queen has been graciously pleased to appoint Herr Gerson von Bleichroder to be Her Majesty's Consul-General at Berlin.

Emigration of Coolies.—A declaration has been concluded between the British and foreign Governments to advance, by fifteen days, the time for emigration of Indian labourers from India to the French colonies to the west of the Cape of Good Hope, signed at London on the 5th inst.

Admiralty.—Sir Alexander Milne has appointed as his private secretary Mr. Sydney L. Dacres, who was private secretary to Admiral Sir Sydney Dacres.

Board of Trade.—The total number of Railway Bills for which plans have been deposited at the Board of Trade is, this year, 187. Last year it was 206.

Shipping and Mercantile Gazette Correspondence.

(Reprinted by special arrangement with Sir William Mitchell.)

Brokerage on Cancelled Charter.—A vessel was chartered before leaving England, to load a cargo of grain in any port on the Continent, and on the vessel's arrival at her loading port there was no cargo for

her, and the captain then entered upon a fresh contract, by telegram, with the same charterers, to have extra freight, and also to be free of all commission, and to shift in ballast to a second loading port, which terms were accepted by charterers. On the vessel's arrival at the latter port the charterers still had no cargo, and the vessel could not then obtain any until the former contracts were cancelled. After laying several days the captain received a telegram saying—"Cancel charters as far as charterers are concerned." The captain then chartered with French brokers, and paid all legal charges to those brokers. 1st. Can the broker in England claim commission on former charter? 2nd. If so, can the captain claim freight on former charter, as charter runs thus—"Penalty for non-performance of this agreement, estimated amount of freight?"—1st. If a broker obtained a charter for the ship in England, he is entitled to his commission although the charter was not fulfilled, the shipowner being indemnified by the penalty for non-performance. 2nd. A merchant having failed to procure a cargo for a ship according to contract, the master procured another freight, and the shipowner not having sustained ultimate loss, was allowed by the jury the nominal damages of 40s.—("Booth *v.* Simpson," Northern Assizes, Liverpool, Aug. 17, 1837, reported in *Shipping and Mercantile Gazette.*) Charterers failing to furnish a cargo of guano at Ichaboe, the master of the ship was held entitled to take a cargo of guano on his own account, the profit of which would belong to the shipowner.—("Lidgett *v.* Williams," Chancery Court, April 30, 1845, vide *Shipping and Mercantile Gazette.*) A charterer having failed to provide a cargo of guano at Ichaboe, the vessel proceeded to and obtained a freight from St. John (N.B.), and the shipowner was held entitled to recover the full freight according to the charter-party, but gave the charterer credit for the freight from St. John.—("Woolley *v.* Smith," Secondaries Court, vide *Shipping and Mercantile Gazette*, November 26, 1845.) According to these and other decisions, our correspondent would have a claim on the charterers for the estimated amount of freight; but, in assessing damages, the Court would allow a set off on the freight earned on the final charter. The ship would be entitled to demurrage for all detention, to all extra cost and port charges, and to any difference between the freights if a lower sum was actually earned.

Cedar Cargo.—How many tons of cedar wood per 40 cubic feet calliper measure would a ship 1,000 tons dead weight stow from west coast Mexico, leave to cut points of logs for stowage?—Ships of ordinary capacity should carry from 30 to 45 per cent. beyond their tonnage. From the Admiralty table, the average weight of a cubic foot of green cedar timber has been found to be 32 lbs., and seasoned 28 lbs. 4 oz. By the New York table, cedar in its green state is estimated to weigh

32 lbs., and seasoned 30 lbs. 4 oz., or not half the weight of English oak. Cedar is generally shipped by weight, and not by measurement. When freight is fixed by measurement, 50 cubic feet of square timber, and 43 feet of rough, go to the ton. There is comparatively a trifling quantity of cedar brought from Mexico into the United Kingdom, the whole import into this country in 1870 being only 144 tons, or not a good schooner load.

JETTISON OF DECK CARGO.—A schooner was chartered in a Scotch port for a lump freight, to go to Norway and bring a cargo of wood. On the passage home part of the deck cargo had to be thrown overboard in a gale of wind. 1st. Are the importers liable for the full amount of the freight, or only for the proportion of cargo actually delivered? 2nd. Are the ship and freight liable for a proportion of the loss of the wood?—1. The freight would be recoverable on the cargo jettisoned in the case above represented. 2. Where a charter-party stipulates that a deck cargo shall be carried, its jettison becomes a subject of general average contribution.—(*The Shooting Star*—"Johnson *v.* Chapman," Common Pleas, May 3 and July 10, 1865; see report in *Shipping and Mercantile Gazette.*) Where it was customary, as in the Irish trade, to carry deck cargo, pigs jettisoned off deck were allowed, as against underwriters, in general average.—("Milward *v.* Hibbert, Queen's Bench, April 28, 1842, reported in *Shipping and Mercantile Gazette.*)

LIGHTERAGE.—A recent decision of the Judges having fixed responsibility for damage to cargo upon the owner of the lighter engaged in carrying it, has caused consternation amongst the large number of lighter owners in this port. Up to the time of this decision it had been always considered that, unless in the case of wilful neglect, the owner of the lighter could not be held responsible for damage. Now, in the Mersey a large number of lighters are employed by the owners of steamships for lightering the cargo to and from the vessel under the following conditions:—The lighter is hired by the day. The steamship owner takes the goods on board, stows them, and trims the lighter. When loaded, the steamship owner sends a steamtug and tows the lighter to or from the vessel, irrespective of the weather or the wishes of the captain of the lighter. From beginning to end of the transaction the shipowner has supreme control. The question I wish to ask you is—Can the shipowner, under these circumstances, supposing the vessel to be seaworthy, hold the owner of the lighter responsible for any damage accruing to the cargo?—The lighters are engaged by the day by the shipowner, whose servants load them, and, when so laden, the lighters are towed away by a tug furnished by the shipowner. The goods remain in possession of the shipowner, in so far as relates to bills of lading, and merely unladen to enable the ship to be docked, or in the case of a vessel

leaving dock, to complete her loading in the river. The shipowner, therefore, as the carrier, is liable to owners of the goods for damages accruing while under his control, and if the goods meet with accident while in the lighters, he has to look to the owners of those lighters for compensation. The lighters being still in charge of the lighterman, the case is analagous to that of a shipowner who contracts to let out his vessel for a given sum, the cargo to be shipped and unshipped at charterer's risk and expense. The only difference is, that the hirer of the lighter engages a tug to tow it away. If the goods are put into the lighters in good order and condition, the lighterman should deliver them in the same condition. If he does not do so it will rest on him to prove—1st, that the goods were delivered in the same condition as received; or, 2nd, that the damage was done by the servants of the hirer; or, 3rd, that the blame rested with the tug; or, 4th, that the servants of the lighterman had no control over the loading or discharging, and were prevented from ascertaining the condition of the goods by the hirers of the lighters. The seaworthy state of the lighters alone would not govern the question, for the goods might be damaged through the negligence of the lightermen. A shipowner who lends a seaman, one of his servants, to assist a stevedore who has contracted to load a ship, is not answerable for the acts of such seaman while in the employment of the stevedore.—(Murray *v.* Currie," Common Pleas, Nov. 16, 1870; see report in *Shipping and Mercantile Gazette.*) The owner of a lighter, therefore, would not be liable for the acts of the servants of the shipowner, whom he does not employ, although they load or unload his lighters; but he would have to prove that the damage to goods did not occur through the fault of the lightermen, or the unseaworthy condition of the lighters. On the other hand, if the hirer of the lighters placed a master and crew in each, he would have no claim upon the lighterman.

Loss of Deck Cargo.—I chartered my vessel at a British North American Port, for a full and complete cargo of timber and deals, for a certain lump sum. While on the passage, the vessel meets with heavy weather, through which we lost part of deck load, and on arriving at my port of destination, I noted and extended protest. Can consignees make any deductions from my lump sum freight for lost deals, as my charter-party says, "accidents and dangers of the seas, &c., always excepted?" —If the ship was chartered for a lump sum, and freight made payable on delivery, perils of the sea excepted, the charterer cannot deduct the amount of freight on cargo washed overboard. His remedy is by action to recover the same.

Seaport.—Is Liverpool a seaport?—The strict definition of a seaport is, a haven near the sea, not situated up a river. In this sense Liverpool

is not a seaport. Liverpool is a commercial emporium, and port for Customs' purposes.

ST. MALO CUSTOM.—We chartered a steamer to load coals from Cardiff. Our charter-party states, as regards delivery at St. Malo, "and deliver the same afloat, alongside any vessel or wharf, where she may safely deliver, as ordered." Further, "cargo to be loaded and discharged in ninety hours (Sundays excepted) from the time of being ready to load and unload." On arrival at St. Malo, the ship's broker sends us a telegram as follows:—"Merchants propose unloading in two days, commencing to-morrow, for £20, otherwise wait turn fourteen days." We have not a word in our charter about waiting turn. Is this legal at St. Malo? We think shipowners and merchants ought to be cautious before they accept charters for that place?—Art. 274 of the French Code of Commerce enacts that where the time for loading and unloading is not fixed by agreement, the time is to be regulated by the custom of the port. The custom of the port is to wait for turn, and the lay-days in France generally commence from the time the ship is at her loading or discharging berth. Steamers, however, get quick despatch; and, according to the charter-party in the case of our correspondent, the vessel should have been unladen, when she was placed at the command of the charterer, within the period agreed upon in the contract. To release the vessel from waiting turn, it would be as well to pay the £20 under protest, and then sue before the Tribunal of Commerce to recover the same.

SHIPOWNER'S LIABILITY.—Some few months back I belonged to a steamer which was unfortunately sunk through collision with a sailing ship in the day-time, thereby causing all hands on board the steamer to lose the whole of their effects. There is no doubt the steamer was in fault; but I believe the owners have recovered their insurance. The collision having been caused through the negligence of the officer of the watch, their servant, has the watch below any claim on the owners for the loss of their effects, and to what amount, if any?—The crew, without specific blame being imputed to anyone of them, if their ship is in fault, are considered in the character of wrong-doers.—(The *Duna*, Admiralty Court, Dublin, Aug. 13, 1860). And see, also, as to claim upon shipowner, and disallowance for wages where the proceeds of ship and freight are insufficient to pay the damages.—(The *Benares*, Admiralty Court, May 23, 1850; the *Chimera*, Admiralty Court, Nov. 25, 1852; and the *Linda Flor*, Admiralty Court, Dec. 24, 1857—all of which will be found reported in the *Shipping and Mercantile Gazette.*) One servant has no remedy against his employer for an accident arising from the negligence of a fellow servant in the course of a common employment;

besides which, the claim for loss would not be entertained if the ship had a licensed pilot on board, and was in compulsory pilotage waters.

USANCE.—I came from Havana to Falmouth, and thence to St. Nazaire, with a charter-party, dated Havana, 27th of June, 1872, one of the clauses of which is in English, and as follows :—"The freight to be paid on unloading and right delivery of the cargo in good and approved bills at usance on London." The merchant here will not pay my freight but in bills at three months' date, or in cash equal thereto, deducting discount for three months, maintaining that in London the word usance means a duration of three months, and not a duration of 30 days only (30 days, or one month), although all the authors treating this matter or subject unanimously say that the commercial term or expression "usance" in London means or signifies 30 days.—The usance is a period of so many months, or days, after the date of a bill of exchange, according to the custom of different places, to which is added the usual three days of grace, at the end of the period of usance. The usance for bills in the Cuban trade is 60 days' sight and three days' grace.

VERBAL AGREEMENT.—A verbal agreement, with witnesses, to freight a vessel to the north of England and back for one, two, or three years, was entered into at a certain rate per ton. The vessel went one year, ending April, 1872, and made two voyages into the second year, and then the owner refused to go on with his contract. Can the shipowner recover damages for his refusal to finish his contract for the second year, as he has suffered a great loss by it?—On proof of the agreement, by parole evidence, the breach of contract may be sustained. "A verbal agreement made between a shipowner and merchant for the employment of a ship on a voyage, and acted upon, held in equity to be equivalent to a charter-party."—("Lidgett *v.* Williams," Vice-Chancellor's Court, 18th April, 1846, reported in *Shipping and Mercantile Gazette.*)

HYDROGRAPHIC.

MERGUI ARCHIPELAGO.

THE following account of outlying dangers in the Mergui archipelago, not marked in the charts, on one of which H.M.S. *Daphne* grounded on the 5th July, 1872, has been received from Commander Richard T. Bateman, R.N., of that ship :—

The Oubliée rocks, in the north-west part of the archipelago, one about 12 feet high, and the other awash, are nearly one mile apart, north-west and south-east. They lie nearly 2¼ miles to the northward of the

north-west point of Elphinstone island, and 3 to 4 miles N.E. by E. of Saddle island, with 15 fathoms between them and Elphinstone island. The position given to these rocks is lat. 12° 36′ N., long. 97° 59′ E.

The reef shown on Admiralty chart No. 216 *a*, Mergui archipelago, as lying off Mount Elphinstone, was not seen, and probably does not exist.

Warning rock, awash at low water, lies between Court and Lord William Bentick islands, about 4¼ miles E. by S. ½ S. from the south-east point of the former island. There is 10 fathoms a mile to the northward, and no bottom at 18 fathoms half a mile to the eastward of the rock. The channel between Warning rock and the reef "above water," 1¼ miles S. by E. of the rock, appeared to be clear.

The position given to the Warning rock is lat. 11° 54′ N., long. 98° 6′ E.; but as the rock was only observed in passing, this position must be considered as approximate.

Daphne rocks, on which H.M.S. *Daphne* grounded, are just covered at low water ordinary tides, and lie north and south, about 100 yards long by 50 broad, consisting of several large boulders with 12 feet on a bottom of sand and mud, between them at low water. They are nearly one mile distant from the mouth of a small creek on the eastern side of Lord William Bentinck island, with 9 and 10 fathoms between them and the land.

From the rocks the east point of West Passage island (off the north-east point of Lord William Bentinck island), was open about one-fifth its apparent length of the western point of South Passage island. The south-east extreme of Lord William Bentinck island bore S. ¾ E., and the centre of the small creek W. ¾ N.

The position given to the Daphne rock is lat. 11° 42′ N., and long. 98° 7′ E.

Karachi or Kurrachee.

The following information relating to Karáchi or Kurrachee harbour, with the increased draught that vessels entering the port during the south-west monsoon may load to, has been issued by the master attendant of that port, dated 26th June, 1872.

Dredging has been again carried on in the new entrance channel to Karáchi, and shingle, with small boulders of rock, are still being removed. A uniform depth of from 16 to 17 feet low water being shown throughout its length and breadth (the latter of about 200 feet).

The breakwater this season has been rapidly pushed forward, and about 500 feet has been added to the work of last year, making its completed length in all 790 feet; this, with an additional length of 200 feet, of rubble-base which is now being deposited, will, it is hoped, afford great protection to the channel in the coming monsoon.

The completed portion of the breakwater is found to give, already, considerable shelter to the channel, and that, up to this time, no silting within it has taken place, although for some time a heavy monsoon swell and break have prevailed.

The advantage of this new channel has been shown, by four ships, varying from 653 to 1,046 tons, and drawing from 18½ to 20 feet, sailing within the last few days safely into port. It must be remembered that three years since all these ships must (had they arrived off the port during the south-west monsoon) have been sent to Bombay to lighten, and that, so late as last year only, a vessel drawing 20 feet could not have crossed the bar; moreover, all vessels were then compelled, at considerable expense and some risk, to tow instead of running directly into port under sail.

Royal Navy and Royal Naval Reserve.

Abbreviations.—Ad., Admiral; A., Assistant; C., Captain; Cr., Commander; C., Chief; Cl., Clerk; Cn., Chaplain; D., Deputy; E., Engineer; F., Fleets; H., Hospitals; I., Inspector; L., Lieutenant; M., Midshipman; N., Navigating; P., Paymaster; r., Retired; S. L., Sub-Lieutenant; Sn., Surgeon; St., Staff; N. Inst., Naval Instructor; 1st Class A. E., 1st. Class Assistant Engineer; 2nd Class A. E., 2nd Class Assistant Engineer; N. Ct., Naval Cadet; R. N. R., Royal Naval Reserve.

Promotions.—**C.**—Charles G. F. Knowles, 1865; James G. Mead, 1865; William H. Maxwell, 1866; Lord Walter T. Kerr, 1868. **Cr.**—Basil E. Cochrane, 1860; James D. R. Hewitt, 1861; George W. Hand, 1861; Seymour S. Smith, 1861; Albert H. Markham, 1862; Adolphus A. F. Fitz-George, 1866. **L.**—Frederick H. Henderson, 1867. **C.E.**—Thomas E. Richards, 1861; Charles A. Stratford, 1861.—**Sn.**—Joseph Halpin, 1859; Henry S. Lauder, 1860; Henry F. Nathan, 1860.

Appointments.—**Ad.**—Sir Sydney C. Dacres, G.C.B., as Visitor and Governor of Greenwich Hospital; Sir Alexander Milne, G.C.B., to be a Lord of the Admiralty. **C.**—Robert R. Harris, 1870, to *Achilles*. **Cr.**—Edward W. Hereford, 1868, to *Columbia*; Noel S. F. Digby, 1872, to *Rattlesnake*; Richard G. Kinahan, 1868, to *Trincomalee*; Robert L. Byng, 1870, to *Duke of Wellington* (for *Devastation*); Hugo L. Pearson, 1872, to *Lord Warden*. **St. Cr.**—Richard T. N. Pearce, 1870, to *Supply* (in command). **L.**—John A. H. Trotter, 1861, to *Indus*; Courtenay A. Hayes, 1862, to *Valiant*; Edward P. Hocker, 1871, to *Revenge*; Claude H. Millet, 1871, to *Cruizer*; Hon. Algernon C. Littleton, 1865, to *Salamis* (in command); William H. Richards, 1862, to *Britomart* (in command); Herbert W. Dowding, 1865, Thomas E. Maxwell, 1871, John M. M'Quhe, 1872, William G. Carrow, 1872, Robert L. Smart, 1870, Charles T. F. Hodgkinson, 1866, and Frederic

G. J. Lillington, 1871, to *Excellent;* Rowland M. Sperling, 1861, to *Duke of Wellington;* Edward F. Day, 1864, to *Merlin* (in command) Arthur B. Mansell, 1866, Frederic J. Rendall, 1866, and William H. G. Nowell, 1867, to *Clio;* Hugh M. Tyler, 1867, to *Royal Adelaide;* Hon. Archibald R. Hewitt, 1866, to be Flag Lieutenant to the Commander-in-Chief at Portsmouth. **R. N. R.**—Robert Curling, honorary. **S. L.**—William H. Webster, to *Royal Adelaide* (supernumerary); Philip Musgrave, to *Duke of Wellington* (supernumerary); Arthur Channer, to *Challenger* (supernumerary); Henry Ponsonby, to *Royal Adelaide;* Algernon E. Thomas, to *Immortalité;* George A. Smith, Henry D. Archdall, and Harold G. Bird, to *Aurora;* Edmund B. Vankoughnet, to *Valorous;* Albert J. McEwan, to *Cruizer;* Powell G. Underwood, Cæsar F. de M. Malan, Henry G. Napier, and Hubert G. Giles, to *Clio*, for disposal; Philip Musgrave, to *Sultan;* Lord Francis Cecil, to *Lord Warden.* **N. S. L.**—James H. Purchas, to *Clio;* Thomas T. E. Cope, to *Merlin.* **M.**—Francis G. S. Laye, to *Invincible;* Crawford J. M. Conybeare, to *Hercules;* Arthur A. C. Galloway, and George T. Spencer, to *Immortalité;* Arthur R. F. Bailey, to *Lord Warden;* Ernest Duncombe, and Spencer B. Hesketh, to *Aurora;* Murray N. B. Harris, Arthur R. Beck, Arthur C. Middlemass, and John Casement, to *Doris;* Frederick Roope, and Cecil G. F. Boothby, to *Topaze.* **N. M.**—Henry James, to Aurora. **C. E.**—William Donnison, 1860, to *Pembroke;* John Prowett, 1866, to *Asia*, for *Urgent;* Walter T. Fry, 1872, to *Pembroke*, for *Encounter.* **E.**—William Thomson, 1871, to *Immortalité;* Charles A. Vogwell, 1868. to *Hector;* Thomas Scott, *d.*, 1868, to *Revenge;* John Brown, *b.*, 1868, to *Clio*, for disposal; William A. Stewart, 1867, to *Asia*, for *Devastation;* James Barre, 1871, to *Topaze;* Richard W. Topp, 1864, to *Revenge;* James Phillips, 1868, to *Topaze;* John Clift, 1865, to *Merlin;* James Dalton, 1862, to *Indus*, for *Princess Alice.* **1st Class A. E.**—Thomas Osborne, 1871, to *Merlin.* **2nd Class A. E.**—William A. Howlett, 1871, to *Challenger*, additional; William G. Parsons, 1871, to *Clio*, for disposal; Isaac J. Alexander, 1871, to *Merlin.* **Cn.**—Rev. Charles, E. Hodson, 1782, to *Penelope;* Rev. Robert Nimmo, B.A., 1869, to *Audacious;* Rev. W. Warner, M.A., 1866, to *Pallas;* Rev. Edward D. Morley, 1872, to *Resistance;* Rev. William Dickson, B.A., LL.B., 1869; to *Hector.* **Sn.**—James Long, M.D., 1858, to *Black Prince;* Thomas R. Warren, 1864, to *Topaze;* William H. Lloyd, M.D., 1862, to *Duke of Wellington*, for Lisbon Hospital; George A. Campbell, to *Black Prince.* **A. Sn.**—James D'Arcy Harvey, 1869, to *Flora;* Edward Olive, 1861, to Chatham Division of Royal Marines; James Donovan, 1871, to *Pioneer;* Herbert M. Nash, 1872, to *Pembroke*, additional, for reserve; James W. Fisher, M.D., 1868, to *Vanguard;* Robert Grant, M.B., M.A., 1872, to

Clio, for disposal; Henry Clerke, 1868, to *Merlin*. **P.**—Charles O. Salmon, 1870, to *Rosario;* Frederic Lucas, 1854, to *Pallas;* Robert W. Warwick, 1854, to *Trincomalee;* William E. Kelly, 1857, to *Brilliant;* Charles B. L. Brockman, 1864, to *Devastation*. **A. P.**—John H. Cleverton, 1863, to *Hart*, in charge; Charles H. Fauvel, 1867, to *Topaze;* Caleb F. A. Broadway, 1867, to *Rapid;* Alfred D. Denne, 1863, to *Pioneer;* William F. Woods, 1865, to *St. Vincent;* Henry Nowell, 1869, to *Topaze;* Charles A. Dunbar, 1870, to *Resistance;* Joshua Taylor, 1872, to *Aboukir*. **A. Cl.**—Joshua Green, to *Cruizer;* Charles H. A. Ward, to *Sphinx*.

Retirements.—**C.**—Henry C. Majendie, 1865. **St. Cr.**—Narcissus G. Arguim Bau, 1867. **L.**—Edward C. Royse, 1863; William C. Shuckburgh, 1865, as Commander. **N. L.**—Edwin H. S. Bray, 1868; Walter H. Worsfold, 1864; James B. Haines, 1862. **N. S. L.**—James R. Gow, 1863; Robert H. C. Hebden, 1866. **C. E.**—Thomas Duncanson, 1856; Jonathan Gee, 1870. **P.**—William H. Ozzard, 1854. **A. P.**—William A. Stevens, 1865; Warden H. E. Roberts, 1864.

Deaths.—**Ad.**—John Lyons, 1866, *r*. **C.**—Edward H. G. Lambert, 1861; John R. Fittock, 1858, *r*. **Cr.**—Astley R. Cooper, 1871; John Garnham, 1871, *r.;* Thomas B. Christopher, 1857, *r*. **S. L.**—Mitford W. Pye, 1871. **St. Sn.**—Frederic N. Raynes, 1869, *r*.

Board of Trade Inquiries at Home.

46. *Ariel*, of Shoreham, stranded on the South Calliper Sand, on the 2nd November. Inquiry ordered 12th November, and held at Liverpool on the 4th and 5th December, before T. S. Raffles, Esq., with Captains Harris and White as nautical assessors. The stranding was caused through gross negligence on the part of the master, who held no certificate.

47. *Aldourie*, of Inverness, stranded on the Long Sand, on the 1st day of November. Inquiry ordered 13th November, and held at Harwich on the 23rd November, before John Watts, Esq., mayor, and Francis Hales, Esq., borough magistrates, with Captain Harris, nautical assessor. Vessel lost through carelessness of those in charge. Master and mate drowned.

48. *Mulgrave*, of Newcastle, in collision with the *Launceston*, of Sunderland, off Hartlepool, on the 16th October. Inquiry ordered 18th November, and held at North Shields on the 7th and 9th December, before C. A. Adamson, Esq., Mayor of Teignmouth, J. F. Spence, Esq., J.P., with Captain Harris and Commander Prowse as nautical assessors. Both masters in default. The *Mulgrave* in porting her helm in the first instance to a light $1\frac{1}{2}$ points on her starboard bow. Master, who held no certificate, was severely reprimanded. The *Launceston* that she did

not stop and reverse her engines when she saw that a collision was inevitable. Certificate suspended for three months.

49. *Leonora*, of Fleetwood, stranded on Castle Island, Skull Bay, on the 4th day of November. Inquiry ordered 15th November, and held at Liverpool on the 3rd and 4th December, before T. S. Raffles, Esq., stipendiary magistrate, with Captains Harris and Steele as nautical assessors. Master exonerated, he having mistook Crookhaven light for that of Fastnet during a fog.

50. *Chebucto*, of London, stranded on Mixen Shoal, off Mumbles Head, on the 9th day of November. Inquiry ordered on the 19th November, and held at Swansea on the 27th and 28th of November, before J. T. Jenkin and S. S. H. Fisher, Esquires, J.P., with Captain Harris and Lieut. W. H. Elton, R.N., as nautical assessors. Casualty occurred through great negligence on the part of the master. Certificate suspended for six months.

51. *Sarah Medcalfe*, of South Shields, stranded in Yarmouth Roads, on Corton Beach, on the 13th day of November. Inquiry ordered 22nd November, and held at Lowestoft on the 3rd inst., before Rev. J. F. Reeve and W. Woodthorpe, Esq., J.P. Captain Hight and Commander W. G. Annesley, J.C., as nautical assessors. Stranding was caused by the severity of the weather. Master did all in his power under the circumstances.

52. *Stirlingshire*, of Youghal, stranded on Cardiff sands on the 6th day of November. Inquiry ordered on the 29th November, but subsequently abandoned.

53. *E. J. D.*, of Nantes, stranded on the South Sands, Scarboro', on the 14th day of November. Captain White appointed on the 22nd November, as inspector, under sec. 14 of the Merchant Shipping Act, 1854. Inspector's report not yet published.

54. *Saxon*, of Glasgow, stranded on the island of Groix, coast of France, on the 16th day of November. Inquiry ordered 27th November, and held at Glasgow on the 10th and 11th inst. Captain Hight and Commander R. J. Day, R.N. as nautical assessors. Master in default. Certificate suspended for six months.

55. *Royal Adelaide*, of Liverpool, stranded on Portland beach, on the 25th day of November. Captain Wilson, I.N., appointed on the 29th November, as inspector, under sec. 14 of the Merchant Shipping Act, 1854, to enquire into alleged plunder, &c., and failure of rocket apparatus. Inspector's report not yet published.

56. *Royal Adelaide*, of Liverpool, see No. 55. Inquiry ordered to be held at Greenwich. Captains Harris and Hight, nautical assessors. Proceedings pending.

57. *Kinsale*, stranded on the coast of Wexford. Mr. W. H. Neate, principal inspector of South Wales coast, appointed inspector, and J. R. Ravenhill, B.L., legal assessor, to inquire under sections 14 and 15, as to plunder, &c. Report not yet published.

Inquiries Abroad.

108. *Bengal*, stranded off the Marshag light, on the 21st day of June. Inquiry held at Aden, before C. W. Tremenheere, Esq., political resident. The Court decided that the master was not to blame for the stranding of his vessel.

109. *Our Hope*, of Melbourne, stranded at Oamaru, on the 18th day of July. Inquiry held at Oamaru, before A. H. Maude and J. Altan, Esqs., J.P. Vessel lost through stress of weather. Master used every exertion to save ship and cargo.

110. *Carnaquheen*, stranded on The Tipara Reef, on the 18th day of September. Inquiry held at Adelaide, before R. H. Ferguson, stipendiary magistrate, J. W. Smith, and D. Tapley, Esqs., nautical assessors. Casualty caused by the master neglecting to ascertain the ship's position by bearings, and not using the lead in time. Certificate suspended for three months.

Rewards.

To Captain E. W. Moritz, of the German brig *Charles Bal*, of Statten, a telescope, from the Board of Trade, for his humane and kind services to the crew of the barque *Chamois*, of London, whom he rescued at sea from their sinking vessel, on 20th Oct., 1872.

The following rewards have been awarded by the Government of Canada:—

To Captain John Orsato, of the Jersey brig *Canada*, an aneroid for rescuing the crew of the brigantine *Ida Cutten*, of St. John, N.B., on 18th Feb., 1871, and 60 dollars to be equally divided amongst the *Canada's* boat's crew, by whom the rescue was effected.

To Captain Ed. Ferrer, of the Spanish ship *Clotilde*, of Barcelona, for his great kindness to the rescued crew of the brigantine *Callie Allie*, of St. John, N.B., in January, 1871.

To Captain C. Drummond, of the German barque *Choristel*, a gold watch, for rescuing the crew of the ship *Valiant*, of Halifax, N.S., and 80 dollars amongst the *Choristel's* boat's crew, by whom the rescue was effected.

To Captain Ole Olsin, of the Norwegian barque *Saga*, a marine binocular glass for kind services in rescuing the crew of the schooner

Uber, of Paresbro', N.S., in 1871; an aneroid to Mr. Johan Thomasin, mate of the *Saga*, for his exertions at the rescue, and 30 dollars to be divided between the two seamen of the *Saga* who manned the boat by which the rescue was effected.

To Captain Berend Heinrich August Barends, master of the North German Steamer *Holsatia*, of Hamburg, an aneroid, by the Board of Trade, in acknowledgment of his humanity to the master and crew of the barque *Ladye Love*, of Liverpool, in July, 1872; and a sum of £2 each to the 4th officer, C. Peter; 2nd boatswain, E. Favol; seaman, A. Adolph; seaman, B. H. Sönnichsen; seaman, F. H. C. Krey; seaman, H. C. F. Wiechmann, for having manned the boat of the *Holsatia*, by which the rescue of the British crew was effected.

To Captain Johann Christopher Rohde, master of the North German ship *Robert Wendt*, of Stralsund, a binocular glass, for his humane services to the master and crew of the barque *Bedbice*, of Liverpool whom he rescued from their sinking vessel on 2nd Sept., 1872.

To Captain J. Lafont, of the French barque *Taurus*, for his services to the crew of the brig *Violet*, of Cardigan, on the 23rd May, an aneroid barometer.

To Captain F. S. A. Ahlers, of the Hamburg ship, *Mathilde*, a large silver tankard, in testimony of his services to the master and crew of the ship *Sanderson*, whom he rescued at sea on 15th Sept. last.

To Captain J. Bruns, master of the North German brig *Diana*, of Oldenburg, a handsome silver claret jug, for his humane services in rescuing at sea the master and crew, twenty in number, of the ship *Cameronian*, on the 21st and 22nd July last.

To Captain David Thomas, of the ship *William Jones*, of Newport, a binocular glass, for his services to the crew of the ship *British Lion*, of Windsor, N.S., in April, 1871.

To William Swanney, John Swanney, and John Tulloch, all of Kidlewall, a silver medal each, from the Emperor of Germany, for having specially distinguished themselves in April last, at the rescue of the crew of the ship *Antonie*, of Stralsund, which was totally lost near the island of North Ronaldsay.

To Captain Thomas D. Turner, master of the steamer *May*, of Sunderland, a telescope, from the Emperor of Germany, for rescuing the crew of the ship *Hebe*, of Stettin, wrecked in the Baltic on 5th August last.

To Captain Francisco Bozzoni, master of the Italian barque *Emma D.*, of Genoa, a binocular glass, from the Board of Trade, for his kind and humane services to the crew of the brig *Nina*, of London, whom he rescued from their sinking vessel on 22nd Sept., 1872.

To Captain Jones, master of the ship *Christina*, of Liverpool, a gold medal and diploma, from the Senate of the Free City of Hamburg, for

saving the lives of the crew of the German ship *Evelina*, of that port, on the 21st June, 1871, near Cape Horn, and for taking them to Callao.

To Captain Henricksen, of the Norwegian barque *Skjold*, of Tonsberg, an aneroid barometer, from the Board of Trade, for rescuing the master and crew of the ship *Mont Blanc*, of Barrow, at sea, on 7th Nov., 1872.

To Captain Halvorsen, master of the Norwegian barque *Frithjof*, of Sandefiord, a binocular glass, from the Board of Trade, for his kindness to the crew of the barque *Janet*, of South Shields, whom he picked up at sea on 31st October, 1872.

To the widow of Robert Ashley, of North Shields, the Board of Trade have granted a first payment of £50. Mr. Ashley was a member of the Tynemouth Volunteer Rocket Brigade, and was washed off the pier at Tynemouth while nobly doing his duty, in the face of a fearful sea, on the 17th December. He was in the Customs' service, and leaves a widow and five children.

CHARTS, *&c., Published by the Hydrographic Office, Admiralty, to the end of December*, 1872, *and Sold by the Agent, J. D. Potter*, 31, *Poultry, and* 11, *King Street, Tower Hill.*

No.	Scale.		s.	d
469	m = 23·7	Spain, S.E. coast, Alicante port	1	0
462	m = various	British Columbia, anchorages adjacent to Fitz-Hugh and Millbank sounds	2	6
2189	m = 3·25	Brititish Columbia, ports adjacent to Principe and Grenville channels	1	6
188	m = 0·4	Mediterranean, Catania to Cefalic, Sicily, including Messina strait	2	6
1483	m = 4·75	Adriatic, Malamocco port and channels leading to Venice	2	0

REVENUE OF THE MERSEY DOCKS AND HARBOUR BOARD.—The sum paid on vessels in the East India, China, and Japan trade was £73,188 17s.; New Zealand and Australian trade, £3,702 9s. 1d.; West Coast of South America, £42,492 14s. 3d.; West Indies and Gulf of Mexico, £21,664 17s. 9d.; United States of America, £48,365 15s.; West Coast of Africa and Cape of Good Hope, £13,062 19s.; Egypt, £38,272 17s. 6d.; Mediterranean (except Egypt), £50,708 6s. 10d.; Baltic ports, £5,028 17s. 10d.; other European ports, £40,021 5s. 7d.; coasting trade, £35,714 7s. 7d. Total, £618,128 14s. 10d. levied as dock and town rates and dues on 6,530,386 tons of shipping in the Mersey for the year ending July 1, 1872.

MONTHLY ABSTRACT OF NAUTICAL NOTICES.

No.	Place.	Subject.
1	St. Lawrence Gulf—Gaspe Harbour—Sandy Beach Point Light Vessel	Additional Light.
2	United States—Maryland—Point Look-out Lighthouse	Establishment of a Fog Signal.
3	United States—Lake Michigan—Grassy Island	Establishment of Leading Lights.
4	Adriatic—Gravosa—Gulf of Quarnero—Port Ika	Establishment of a Harbour Light.
5	Mediterranean—Egypt—Arabs Gulf—Almaida	Exhibition of a Light.
6	Mediterranean—Greece—Morea—Katakolo	Discontinuance of Light.
7	Adriatic—Dalmatian Islands—Olipi Island	Establishment of a Light.
8	Jamaica—Port Morant	Alteration in Buoys.
9	Mediterranean—The Bosphorus	Position of Lights and Buoys.
10	Mediterranean—Sea of Marmara	Shoal off Stephand Point.
11	England—South Coast—Hastings	Establishment of a Pier Light.
12	England—South Coast—Eddystone Lighthouse	Establishment of a Fog Signal.
13	Mediterranean—Spain—Barcelona	Mole Lights.
14	Mediterranean—Italy—Viareggio	Mole Lights.
15	Adriatic—Gulf of Cattaro—Budua	Establishment of a Harbour Light.
16	Mediterranean—Sardinia—Capre a Island	Shoal off Rossa Point.
17	Black Sea—Kertch Strait	Establishment of a Light Vessel.
18	Baltic—Rugen Island—Arkona Light	Alteration in Light.
19	Baltic—Gulf of Danzig—Heisternest	Establishment of a Light.

NAUTICAL NOTICES.

1.—St. Lawrence Gulf.—*Gaspe Harbour.—Sandy Beach Point Light-vessel.*—An additional light is now exhibited from this light vessel, at the entrance of Gaspe harbour. The additional light is a *fixed white* light, which is exhibited 6 feet above the red light on the same mast. Also, that the red light has been made more powerful.

2.—United States.—*Maryland.—Point Look-out Lighthouse.*—A fog bell has been established, which, in thick or foggy weather, is struck, by machinery, *every ten seconds.*

3.—United States.—*Lake Michigan.—Grassy Island.*—Two *fixed white* lights will be exhibited as a guide through the new cut into the

mouth of the Fox river. The lower light is 30 feet, and the upper light 37 feet above the lake, and they should be seen 11 miles.

4.—Adriatic.—*Gulf of Quarnero.—Port Ika.*—A *fixed white* light is now exhibited from a lamp-post 14 feet above the sea at this port. The light should be seen from a distance of 2 miles.

5.—Mediterranean.—*Egypt.—Arabs Gulf.—Almaida.*—In accordance with Notice No. 159 of last year, from this day, a light will be exhibited from the lighthouse. The light will be a *fixed white* light, 187 feet above the sea, and in clear weather should be seen from a distance of 22 miles. The lighthouse is constructed of iron pillars, and painted grey. It is 158 yards from the edge of the water, and in lat. 30° 51′ N., long. 29° 11′ 10″ E.

Note.—There is a good anchorage in 6 fathoms, with the lighthouse bearing south, and there is a spring of fresh water near the building.

6.—Mediterranean.—*Greece.—Morea.—Katakolo.*—The red light on the extremity of the mole does not now exist.

7.—Adriatic.—*Dalmatian Islands.—Olipi Island.*—A *fixed red* light is now exhibited on the eastern end of this island, entrance of Bocca Falsa, Kalimota channel. It is elevated about 40 feet above the sea, and should be seen 5 miles. The lighthouse is built of white stone, and is attached to the keeper's dwelling. Position, lat. 42° 45¼′ N., long. 17° 47′ E.

8.—West Indies.—*Jamaica.—Port Morant.*—Only two buoys are now in position—viz., the West entrance buoy, and the buoy on the Leith Hall spit. The West entrance buoy has been changed in colour from red and white stripes to *red.* The Leith Hall buoy has been changed to *black.*

Caution.—With the port open, several houses are visible on the hills, but three are much more conspicuous than the others. The easternmost of these conspicuous houses is on the hill slope, a little below its crest; the middle, which is the house to be used as the leading mark, is the easternmost on the hill summit. By keeping this house on the east side of the Red cliff, it leads up the eastern side of the channel. Caution is necessary, as the East entrance buoy is now removed, and the colour of the West entrance buoy is that of the former East entrance buoy.

9.—Mediterranean.—*The Bosphorus.*—Information has been received in respect to the positions of some of the lights and buoys. They are as follows: viz.—

Seraglio Light, is in a position one-third of a mile to the north-west of that on which it has hitherto been placed on the charts; and is exhibited on the extremity of the point S.E. by E. ½ E. from the mosque of St. Sophia.

Duimi Bank Light, hitherto supposed to be on the Kuru bank, is exhibited from a mast on a white house on the Duimi rock.

Kiritch Burnu Lights, hitherto supposed to be at Kefch-li-keui, are on the point close to the south-east end of Kiritch Burnu battery.

Dikili Rock, has an iron tripod beacon on it, surmounted with a cage ball.

Umur Buoys.—The S. and S.W. buoys on the Umur, or Englishman's banks, are *red* buoys surmounted with cages.

Note.—Within these banks is the quarantine ground for vessels arriving from the Black Sea; and as vessels generally pass westward of the shoals, and round to at the south end, these buoys are most useful, as vessels, in keeping close to the bank to avoid being swept down the Bosphorus, frequently ground on the edge. .

10.—MEDITERANEAN.—*Sea of Marmara.—Stephano Point Shoal.*—The shoal which lies south-eastward from Stephano point, extends one-third of a mile from the shore.

Clearing Marks.—The west angle of Selimiyyeh barracks in line with the trees on the summit of Mount Bulghourlu, bearing E. by N. $\frac{3}{4}$ N., clears Seraglio point shoal, and the Stephano point shoal.

11.—ENGLAND.—*South Coast.—Hastings.*—A *green* light is now exhibited from the top of the saloon, about 50 yards from the end of the pier, at Hastings. It should be seen 4 miles.

12.—ENGLAND.—*South Coast.—Eddystone lighthouse.*—A fog bell has been established, which, in foggy weather, will be sounded *five times* in quick succession *every half minute.*

13.—MEDITERRANEAN.—*Spain.—Barcelona.*—A *red* light is now exhibited 33 feet above the sea, on the extremity of the western mole at Barcelona. It should be seen 3 miles.

Note.—The extremity of the east mole is still marked by a *red* light. Vessels may enter the port between the lights, and pass at a distance of 40 yards from the western light, and 60 yards from the eastern light.

14.—MEDITERRANEAN.—*Italy.—Viareggio.*—A *fixed red* light is now exhibited from the extremity of the southern mole at Viareggio, and the colour of the light on the northern mole has been changed from red to *green.*

15.—ADRIATIC.—*Gulf of Cattaro.—Budua.*—A *white* light is now exhibited from a lamp-post at the outer extremity of the rock at Budua. It should be seen from a distance of 2 miles. Position, lat. 42° 16′ N., long. 18° 50′ E.

16.—MEDITERRANEAN.—*Sardinia.—Caprera Island.*—A shoal with $2\frac{1}{2}$ fathoms water on it, and $4\frac{3}{4}$ fathoms close to, lies one cable W.S.W. from Rossa point.

17.—BLACK SEA.—*Kertch Strait.*—A light-vessel has been placed

at the Black Sea entrance of Kertch strait, in lat. 45° 15′ N., long. 36° 29′ 20″ E., and is moored in 19 feet water. From this vessel two lights are exhibited, one 45 feet and the other 35 feet above the sea. They should be seen 7 miles. Vessels from the Black Sea entering the strait should pass to the westward of the light-vessel.

18.—Baltic.—*Rugen Island.—Arkona Light.*—The light is now seen in Tromper bay as a *red* light westward of N.N.W. ¾ W.

19.—Baltic.—*Gulf of Danzig.—Heisternest.*—A *fixed and flashing* light, showing a *white* light for *thirty seconds*, followed by an eclipse of *ten seconds*, the a *red flash* of *ten seconds*, and another eclipse of *ten seconds* is now exhibited near Heisternest, on the promontory of Hela; it is elevated 120 feet above the sea, and should be seen 8 miles. Position, lat. 54° 39′ N., long. 18° 47′ 20″.

GENERAL.

Plan for Preventing Collisions at Sea.—Captain Molloy, of Gloucester, makes a proposal as follows:—"To compel all steamers and sailing ships above a certain tonnage, in addition to the two bow-lights at present in use, to carry two others of precisely the same pattern—one on each quarter of the ship—as far aft as possible consistent with the build of the vessel. The great advantages of this plan will be: 1st—The lights thus placed will *at once* indicate the least alteration in the position of the helm, whether to starboard or port; and this in moments of danger or doubt is of *vital importance*. 2nd—They will in the clearest manner indicate the direction of the ship's head, which, in critical cases, is most essential, inasmuch as it completely banishes the elements of uncertainty that at present exist; and, 3rd—An additional safeguard will be provided against the negligence of those whose duty it is to attend to the lamps—there being four lights instead of two upon which to rely. The safety thus ensured to all vessels, especially when navigating narrow waters, and the greater security to life and property, will be obtained without in any way interfering with the present rules of the road, as laid down by the Board of Trade. And a ship thus lighted may be steered, or met by other ships, with the utmost confidence in all cases, as ocular demonstration will be given of the relative position of each ship, and also of every movement of the helm." We make no comment on this proposal, as we doubt whether any proposal to increase the number of lights is likely to find favour with those most interested—viz., shipowners and shipmasters. We think it right, however, to point out that it is not the Board of Trade, but the responsible legislature of every maritime country

in the world, who have made the existing regulations. They are therefore not easily altered.

STORM WARNINGS IN THE UNITED STATES.—The American "Signal Office" is an institution modelled on the system of storm warnings devised by Admiral Fitzroy. It has been discovered that America has a great November "atmospheric wave." It originates in the Pacific Ocean, and has been traced across the whole breadth of the continent. Storm-warnings are consequently often issued two or three days in advance. The last great storm-wave was signalled simultaneously with the burst of the gales on our western coasts and over the Baltic. This wave was contemporaneous with shocks of earthquake at Austin and Nevada.

MEDICINE CHESTS ON BOARD SHIP.—In reply to several correspondents, we have to state that under Section 226 of the Merchant Shipping Act, 1854, Local Marine Boards have power to appoint inspectors of medicines. The extension of any compulsory inspection is, we think, not to be regarded with favour; and, no doubt, the Local Marine Boards entertain this view of the case, as regards inspection of medicines. It is a different thing, however, to appoint inspectors to whom applications for inspection may be voluntarily made, from appointing inspectors to whom application *must* be made. In one case trade is left unfettered, and inspections optional; whilst, in the other case, delays and expense would often be caused by waiting for compulsory inspection.

HINDOO BRAVERY AND GRATITUDE.—A pilot on the Hooghly writes as follows:—I was in pilotage charge of a ship in 1837, or 1838, going down the River Hooghly, during the stormy season, under tow of a steam-tug. The tug was cast off in the Rankafullah Channel, where both ship and tug were anchored, three hundred yards apart, opposite the Rankafullah Pagoda. The captain and myself left the ship for the tug. We both apprehending an easterly gale, the wind from that quarter would give the ship such a good slant down the Bay of Bengal, if she could be brought clear of the sandheads, before the gale set in strong. After reaching the tug, we observed a squall was brewing to the north-west. We settled our plan for towing the next day. The squall was approaching. We hurried back to gain our ship before the squall would catch us. The boat was within rope's-end distance, and had it been proffered it might have reached us; but the squall, not the rope, reached the boat, drifting her astern of the ship. The boat's crew, Hindoos, lost heart, and refused to pull. The boat took her own course, bounding for the steep beach with destructive speed. Her bow took the bank and passed into shreds. The sea then caught the boat on her broadside, driving her against the bank, jerking all out of her on to the beach. The captain of the ship was taken in the act of divesting himself of his clothes for a swim. He was cast on shore by the jerk, like Count Fathom on all fours, clutching the mud, in his small

clothes as if expecting another toss back. Looking round for the boat she had collapsed and passed away. Barely clear of the water trouble, before we are assailed by a dread of tigers. The place where the boat had been stranded was said to be infested with them. Nothing was left me but to declare that tigers, like bees, were always found at home in bad weather. As the evening closed in, after two hours' exposure to wind and rain, the storm subsided. The tug's boat was sent to rescue us from our perilous position, taking the captain and myself from the beach to the ship. The boat's crew had been taken on board another boat, which had been forced into a cranny in the bank by her crew to shelter her from the sea and the storm. Our ship had driven during the squall, but the second anchor had been let go, and that had detained her from following the boat's course. The head man of the crew of the stranded boat came on board the ship the next morning. He pleaded their cause so successfully to the captain that he consented to pay half the price of a new boat, if the boatmen could find anyone else who would contribute the other half. That matter was soon settled. The boat was built; the price paid for the new boat exceeded the sum estimated; the boat was to be held by the crew on the same terms that they had held their former boat. I did not know how it was in the case of the former owners, but I know in the last case they came in for their share of the boat's losses, but the crew pocketed the boat's earnings. The boatmen were efficient, knowing their work well, therefore, were mostly in employment. During the fine season, at times there is a scarcity of shipping arriving at the sandheads, they being detained outside by light airs and contrary winds. At these times many tow boats were in the locality of Saugor Island, fishing and waiting ships. The captain's tow boat, in one of these scarcity of ship arrivals, had been so long detained in that vicinity that they had no firewood left on board the boat. The crew determined to land on Saugor to gather sticks and roots for firing. The boat was pulled to the shore, and while the crew were engaged in gathering firewood, a tiger threw in its appearance among them. One of the crew, an old man, strongly counselled their remaining together, declaring if any should break away, he would single himself out for the tiger. The head man of the crew was much the largest man among them. He was the first to break council, taking to his legs—showing a white feather, although a black. As the old man had declared, the tiger marked him for its own. The head man had a nephew in the crew, who, determined to be upsides with the tiger, seizing the largest stick he followed after the tiger. The uncle, finding he was running a losing race, made the attempt to elude the beast by taking to the water for a dive; but the water was too shallow to hide the pursued from the vision of his hungry foe. The brute plunged, too, and was soon up to its prostrate

prey—planting a paw on his cheek; a talon passed through. Thus the tiger drew the man to itself, grasping the man's shoulder with its mouth. The tiger turned to carry on shore what it had fastened, but there stood the indomitable nephew, with his upraised stick in readiness to contest the tiger's passage. With a well-aimed blow, the stick descended with a force sufficient, on the tip end of the tiger's nose, to break the stick short off at the deliverer's hands, and, doubtless, to disturb the nasal bones of the tiger. To stop thus the channel of the brute's breathing, the blocking the passage of its mouth, the blow must have had a decisive effect from the animal's nose to its tail. Its jaw must have fell, dropping the uncle to gain breath, for he gagged the only passage the tiger had left for breathing. The beast slank off for its lair. The lacerated man had to be taken some forty miles to join his family. On my entering the river I was entertained by most ghastly stories about the tiger-seized man, some stating that the tiger had wonderfully perforated him about the head and neck, that when he smoked the hookah, the smoke found a chimney in each hole, the smoke passing out by them. I used my endeavours to see the man. At last I found him at a village called Nine Lair, resting under mosquito curtains. His wounds were wadded with cotton, which was very obnoxious to the nose. I hired a boat, penned a letter to the medical officer of the Chadney Choke Hospital, sent him off, and he was received into hospital and was said to be doing well, but he became disturbed about things at home, some thirty miles off. He rose at four one morning, eluded the hospital servants, in hopes of doing the trudge home. The hot sun by day, and the cool, damp nights were too much for his wounded state. He succumbed to the task, gangrene set in, and he died. Three weeks after his decease, while seated at breakfast, I saw a black goat insert itself through my garden gate. Having heard that goats were most destructive to rose trees, I rose to kick it out, but what was my astonishment when I saw the goat was backed by the indomitable nephew, clutched round by five little black children. "What now?" I exclaimed. He said, "Your boatman is dead, and his wife cannot use the boat, nor support his five children; therefore, she has sent them to you with the black goat to bind the bargain."

New American Line.—Webb's Line from the United States to New Zealand, and Australian Mail Steam Ship Line, has been transferred to a company formed in New York—viz., the "California, New Zealand, and Australia Mail Steam Ship Company."

Port of Great Grimbsby.—The quays and warehouses have been choked up with merchandise. During the month of November the Manchester, Sheffield, and Lincolnshire company's steamers brought in

thousands of quarters of barley from Hamburg, and thousands of tons of potatoes from Antwerp and Rotterdam. The importation of French sugars during the month by the Anglo-French Company's boats has been doubled. The Grimsby and Ghent Steam Ship Company have also been doing a great carrying trade in sugar, flax, apples, and potatoes. The arrivals of timber have been immense.

A MAN OF WAR AGROUND.—Her Majesty's ship *Daphne*, Commander Bateman, while steering among the 135 islands of the Mergui Archipelago, West Coast of India, struck on an undiscovered rock, and all efforts to remove the ship were made without effect for over 36 hours. At the end of this period the vessel drifted off apparently safe and sound. The ship's keel was scraped, but not sufficiently to cause the least alarm to those on board. The islands, especially the four chief ones, King's Island, Clara, St. Matthew's, and Tennasserim, are all considered very fertile, and a distance of between 15 and 30 miles only divides them from the mainland.

UNITED STATES CODE OF FOG SIGNALS.—The following circular has been issued by the Treasury Department, Washington, July 18, 1871:—"The following rules, prescribing certain fog signals to be sounded by sailing vessels, steamers, and other craft, during a fog or thick weather, adopted by the Board of Supervising Inspectors of Steam Vessels, having been approved by this department, are hereby promulgated for the information of all concerned.—(Signed) GEO. S. BOUTWELL, Secretary of the Treasury."—"RULES: Every steamer, when running in a fog, shall use a steam whistle. Sailing vessels, and all other craft propelled by sails, shall use the Anderson Fog Horn. Whenever there is a fog, whether by day or night, the fog signals described below shall be sounded. Sailing vessels, and every craft propelled by sails upon the ocean, lakes, and rivers, shall, when on their *starboard tack*, *sound one blast of their fog horn;* when on their *port tack*, they shall sound *two blasts* of their fog horn; when with the wind free or running large they shall sound *three blasts* of their fog horn; when lying to or *at anchor*, they shall sound *a general alarm*. In each instance the above signals shall be sounded at intervals of not more than *two minutes*. Sailing vessels, when not under way, and anchored or moored in the channel or fairway of commerce, shall sound the general alarm signal at intervals of not more than *two minutes*, and all *steamers* navigating in a fog or thick weather shall, by the rules governing pilots, sound their *steam whistle* at intervals of not more than *one minute*. It shall at all times be the duty of steamers to give to the sailing vessel, or other craft propelled by sails, every advantage, and keep out of her way."—This is the first attempt to make an international phonic fog signal, and it opens up a large field to the ingenious. We have tried the *Anderson* Fog Horn, and, for horrid and penetrating sound, it is about

the most diabolical invention, next to a "buzzer," that we have endured. It must be useful in a fog. If our Board of Trade would only take up some one patentee, and require all ships to use his invention, as the Secretary of the Treasury in Washington does, "*some money*" might be made in this country; but our Board of Trade never has, and, we trust, never will, prescribe that any particular invention shall be used. The best thing wins here, whether it is a patent or not. This is the best fog horn.

ROCKETS AT WORK.—On the 17th Dec. last, the screw steamer *Natalian*, with broken-down engines, was trying for the Wear under canvas; but, owing to bad weather, she was unable to make the entrance. She went ashore, and the sea went over her. The rockets were promptly on the spot, and the first one fired was the means of saving the whole crew of seventeen, beginning with the cabin boy and ending with the captain. The rockets have saved many valuable lives during the past month.

DECK LOADS.—TIMBER SHIPS.—We have at the present moment statistics of upwards of 100 timber-laden ships, carrying deck loads that have either been lost with their crews, or whose crews have suffered torments worse than death. These are *British* ships. Now, that a great deal is said about the *supply* of British seamen, something might be said of the *waste* of British seamen. What is the use of supplying them if they are wasted afterwards? Those British shipowners, who are philanthropic enough to do all they can to convert street arabs (a sad misnomer, by-the-bye) into British seamen, might at least be solicitous that when they are converted they should not be tortured or drowned. Now, it happens, that 100 British ships lost in the timber trade means 2,000 men lost, and 2,000 men, at least, in that trade means 6,000 widows and children. What are we to say to all this? If the British taxpayer is to support them, the British taxpayer, through his representative in Parliament, ought, even according to the cold-blooded doctrines of Mr. John Stuart Mill, at least, to see that the "supply does not exceed the demand" even of sailors' orphans. There was once a law against deck loads, but Her Majesty's Government repealed it. It is a curious fact that the unparalleled losses of timber ships this year did happen to timber ships *with* deck loads. We object, on principle, to Government interference with trade and with the concerns of daily life, and wholesale compulsory inspection. It seems to us that the remedy is not difficult. First, the space occupied by these dangerous cargoes carried on deck should no longer be exempted from tonnage dues, but should pay treble dues. Secondly, seamen in Canada should have the power they have in England, viz., to refuse to proceed to sea in an unseaworthy ship whether with a deck cargo or not, and an independent authority should decide in such cases

whether the seamen are right or wrong. It is a gross injustice to compel seamen to go to sea in any unseaworthy ship.

A Sailors' Strike at Calcutta.—The seamen in Calcutta struck in October last for the same rate of wages as was then ruling in Liverpool, London, and other places, which was £3 10s.; while in Calcutta the rate was £2 10s. The boarding-houses charged them £3 per month, and the Sailors' Home £2 10s. The men dispersed, after some palaver, and no disturbance of any kind occurred.

Prize Safety Valves.—Designs received by the 10th Dec., 1872, are as follows:—1, Fleiss erndtet Fries; 2, Semper Vigilans; 3, A Step in the Right Direction; 4, Q. E. D.; 5, Post tenebras lux; 6, Alpha; 7, Virgo; 8, Molecular Vortex; 9, Ditto, ditto; 10, C. Ax. Carlander; 11, Cummins Cummins; 12, Magellan; 13, Primus.

The Largest Steamer in the Seal Fishery.—The Inman Line have sold to Messrs. Baine and Johnston the mail steamer *City of Halifax*, to be employed in the seal fishery. She will carry 220 men. Her length is 204 feet; breadth of beam, 29 feet 9 inches; and depth, 17 feet.

Floods in Denmark.—The inundation appears to have been caused by the prevalent west winds, especially by one heavy gale in the Cattegat having dammed up the water at Skagen a few days before, so that the Baltic was too full; the sudden east wind then set in and blew the water back again, and it could not get out quick enough by the channels. A gale of very rare type advanced from east, not from west. The inundation of 1872, was not nearly as great as in 1825. In East Friesland 14,000 inhabitants were in the former year flooded out, and the sea dam burst on that occasion.

Surveys of Passenger Ships.—We learn from the *Shipping Gazette* that the North of England Steam Shipowners' Association have memorialised the Board of Trade on the subject of surveys for passenger certificates. The association point out that shipowners often suffer loss and inconvenience from ignorance of new regulations issued by the Board to its surveyors, and from the different interpretations which the surveyors give to the orders under which they act. Sometimes at the end of extensive repairs, the surveyor who comes to examine a vessel, orders some arrangement to be carried out of which the owner has never heard before, and not only is the ship delayed for some days, but portions of the work have to be done over again. Nor is it a rare occurrence for a ship that has been surveyed and passed in one port to be examined in another port by a fresh surveyor, who directs various alterations to be made which the first officer did not consider necessary. The association think that these anomalies ought not to exist, and

they ask the Board of Trade to issue more precise instructions to its surveyors, and to send copies of the regulations and notice of any changes that may from time to time be introduced to the Shipowners' Association, Chambers of Commerce, and to the maritime newspapers. On this we have to state that all Board of Trade regulations and circulars are published *in extenso* about a dozen times in the *Shipping Gazette*, and are always *reproduced* in the *Nautical*. If the Steam Shipowners' Association would incur the expense of 5d. daily for the *Shipping Gazette*, or 1s. monthly for the *Nautical*, they would get copies to spare of every order or instruction issued.

MASTLESS OCEAN-GOING STEAMERS.—Mr. Thomas Henderson, of 51, Union Street, Glasgow, has taken out a patent under the head of "Improvements in Screw Steamers," having for its objects the providing of additional security to life and property, the obtaining of an increased speed by a given steam power, and the enabling of screw steamers to "safely dispense with masts and sails for propelling purposes." "The invention consists in constructing a screw steamer with two screw apertures, one before the other, in a line with the keel, the after one being of the ordinary dimensions, and the forward one about half the dimensions of the other, and each being fitted with a separate propeller shaft and screw. The forward screw is of a size suitable to work in the space available between the keel and the shaft of the after screw. The two propeller shafts may be connected to one set of engines, or to separate sets of engines, or the smaller shaft may be fitted with coupling appliances, admitting of its being connected either with the main engines, or with a set of smaller engines. In ordinary circumstances, it is proposed to use both propellers and all the available engine power to ensure the maximum speed. In the event of accident to either set of engines, shaft, or propeller, the disabled propeller may be instantly disconnected, and the propelling of the steamer be continued with the other propeller; this enabling the voyage to be prosecuted independently of any assistance from masts and sails, or from other vessels." The proof of the pudding is in the eating. The value of this invention can only be proved by actual practice. We do not know whether this invention is patented by one of the firm of Handyside and Henderson, "Anchor Line," whose place of business is, according to the *Mercantile Navy List*, in Union Street, Glasgow, but if it is, then we have no doubt that the test of practice can and will soon be applied. For our own part, however, at the present moment, we would rather go to sea in a full-rigged steamer, than in one entirely without masts. Masts and yards are an evil, it is true, in going ahead to wind, but they are an exceeding comfort when the shaft gives way, or the machinery goes wrong in other respects. The invention of Mr. Henderson opens

up one or two questions for consideration: viz., 1. Will increased speed be obtained by using two screws instead of one, with the same amount of power, boilers, cylinders and pressure of steam? Is one screw immediately before the under part of the other screw, in the best position for the exertion of power by two screws? If the small screw breaks down, will it be of any disadvantage to the big one? If the big one breaks down, will the power of the small one not be really insignificant? If both screws are to work from one engine, and that one engine breaks down, will not both screws be useless? and will not the vessel, without masts, be helpless? If two engines are to be supplied, then is not the common twin screw preferable? Mr. Henderson will, we hope, solve these questions by fitting up a ship for an ocean voyage. We would, however, venture to suggest, that in the first trials, masts and sails may be carried, in case they are wanted, and that a cargo, and not a passenger steamer be used. We believe that we shall come to mastless steamers in time; but the process of development is just now much hindered by the untrustworthy character of heavy forgings.

Metal Lifeboats.—A question has been raised as to the use of metal boats for shore lifeboats. To show that they can be of use, we quote the following as to the Sable Island boats. The information is sent to us by Captain R. B. Forbes, an old contributor in the United States:—"Boston, 6th Nov., 1872. Dear Sir,—Referring to what I wrote to you not long ago in reference to Sable Island, I have now to hand you extract from a letter of E. Merriam, of Brooklyn, New York, dated 8th January, 1855, to myself, which I hope will be of sufficient interest to print in your journal. The letter quotes from one received by M. M., from Miss D. L. Dix, a lady well known for her labours in the cause of humanity. I have great pleasure in enclosing extract from a letter received from Hon. Hugh Bell, of Halifax, bearing date December 7th, 1854:—'The very day after the arrival of the large boat, the *Reliance*, at Sable Island, a large American ship, from Antwerp, with upwards of 160 passengers, was cast upon the N.E. part of the island, and lurched so that the sea beat into her and rendered all chance for the escape of her people, by their own means, hopeless. The sea was so rough that *none of the island boats could live in it.* The wreck was twenty miles from the station. The *Reliance* rode on the waves like a duck; with her and the *Grace Darling* and the *Samaritan*, all the passengers and crew, 180, were rescued by your means so *providentially* furnished.' Mr. Merriam's letter states that the three boats were *Francis's Metallic Boats*, and that the vessel by which they were shipped was wrecked, the boat damaged returned to New York, repaired and reshipped, arriving just in time. I had the pleasure of raising means for Miss Dix, and caused one wooden boat to be sent from here, as appears by the enclosed

copy of my letter to the Hon. John Howe, Provincial Secretary, dated 2nd December, 1853. This seems to have been nearly a year before the rescue."

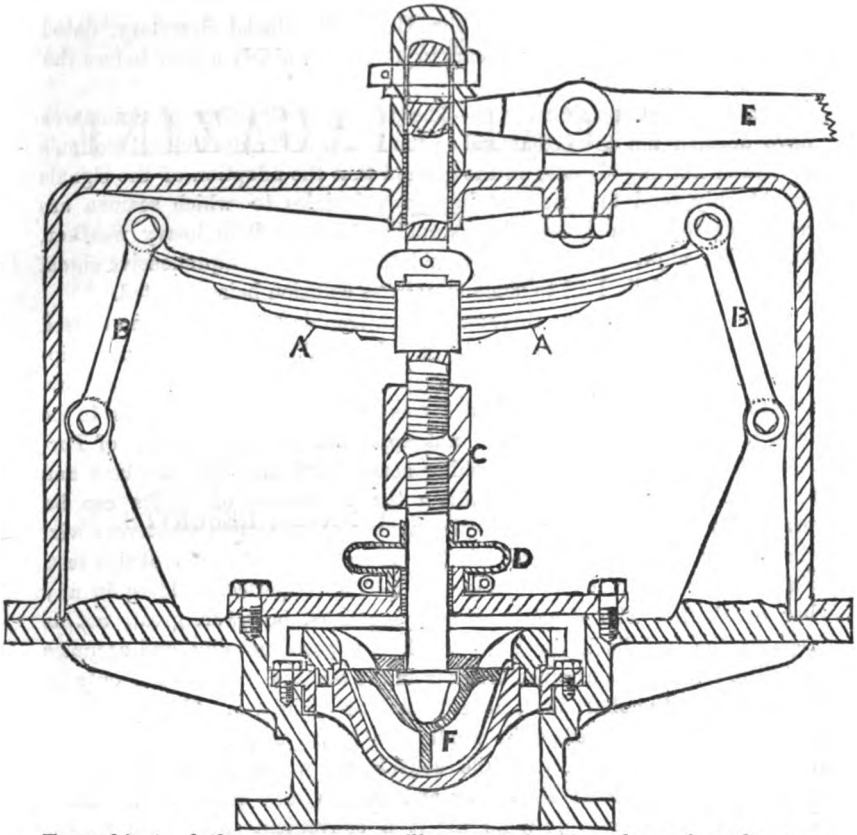
BOLTON'S FLASHING SIGNALS.—The Liverpool Chamber of Commerce have decided not to recommend to the Board of Trade Colonel Bolton's system of flashing signals, on the ground that the adoption of the signals would only tend to upset established principles to which seamen are now accustomed, and that they would not only fail in heavy weather, but, being night signals, they would fail where a comprehensive signal would almost daily lead to some disastrous collision being averted.

TESTS FOR PROPELLER SHAFTS.—Much trouble has of late been caused by the breaking of shafts in steam ships. We hear that some ship-owners are taking the matter into serious consideration, with a view to protecting themselves against losses on this account. It is to be hoped, however, that they will not apply for the interference of Parliament with a view of establishing some hard and fast standard and test. There is a method by which the soundness of shafts can be practically tested without subjecting them to any strains whatever: viz. the magnetic test; and so great is the accuracy and efficiency of this test, that it immediately indicates any soft spot or imperfect welding in any bar or shaft. The expense of applying it is, however, great, not as regards the test itself, for that, absolutely, costs nothing, and occupies but little time. The expense arises from the fact that the test can only be applied when the shaft is removed from the vicinity of other masses of iron. It cannot, therefore, be applied on board ship or in a workshop. It may, however, be worth while considering whether it would not be more economical to the shipowner and underwriter, in the end, to incur the expense of conveying a forging to a convenient spot to be tested, rather than to risk, as is now so often the case, a ship, cargo, crew, and passengers, by an unsound piece of shafting.

LIST OF VESSELS WHOSE NAMES HAVE BEEN CHANGED.—*William Miller*, (ss.) of Leith, to *Sappho*, of London; *Plynlymon*, of London, to *Troubadour*, of London; *Jane Henderson*, of Glasgow, to *Toowoomba*, of London; *Wamphoay*, of Miramichi, to *Walls Castle*, Liverpool; *Rosslyn*, of Prince Edward's Island, to *Jane Harrison*, of Maryport; *Deerhound*, of Sunderland, to *Kingdom of Saxony*, London; *Maormer* (ss.), of Dundee, to *West*, of Liverpool.

CABLE BETWEEN ENGLAND AND SPAIN.—Messrs. Aspinwall have officially conceded to the Anglo-Spanish Telegraph Company (Limited) grant by the Spanish Government for the submarine cable between England and Irun.

TAYLOR'S COACH SPRING SAFETY VALVE.



THE object of the arrangement, illustrated by the above, is to have a reliable and durable spring safety valve. It is accomplished as follows:—The spindle rests upon the annular valve F, and is pressed down by the coach spring A A. C is a nut to regulate the required set to produce the necessary load. B B are radius rods which impart to the valve a greater lift than is due to the pressure exerted on the under surface, and are for the purpose of overcoming the increasing resistance of the spring; if in conjunction with an annular valve (as per sketch), this combination, it is thought, most completely and effectually gets over that resistance. The safety valve springs are coated with copper. D is an india-rubber expansion joint, steam tight, but is only used when the springs are not coated. Many of these valves are already at work in steam ships, with pressures ranging from 25lbs. to 80lbs. per square inch, and we learn that there are in course of construction, amongst others, between nine and twelve, each to sustain a load of 8,000lbs.

THE

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NEW SERIES.

FEBRUARY, 1873.

THE ROYAL NAVY AND ROYAL NAVAL RESERVES.

DURING the late Franco-German war, and down to the present time, much has been said and written about the necessity for increasing the defensive power of this country. Much also has been done in this direction, but, if we are to judge from the letters and speeches of experts, not nearly sufficient to meet the necessities of the case. Whether enough has been done to satisfy the desires of the public is an open question. We purpose to contribute to the general discussion by reviewing the lessons to be learnt from the late war; to indicate what are believed by many persons to be the sources of weakness in our present naval system, and their remedy; and to sketch out a plan for defending the coast in an efficient manner and at a small expense.

The marvellous rapidity with which France was crushed by Prussia in the late war not only surprised us, but created a general feeling of insecurity amongst us; and even now that we have been enlightened as to some of the causes of weakness in the one army and of strength in the other, the magnitude and completeness of the Prussian success seems hardly less wonderful. The German armies were made up of troops from independent states, hastily summoned to act together, and they consisted to a great extent of landwehr, or militia, organized principally for defence of their own territory. That they should almost immediately take the offensive, and annihilate the large regular armies opposed to them in their own strongholds, even the Prince of Prussia did not

expect. "We shall beat them in the end," said he, when on his march to the field; and these words probably expressed the general feeling of Germany at the time. It implied reliance on the military organization of the country, and trust in the patriotic enthusiasm of the people to support and endure what was felt to be a war of defence. The people did not expect such speedy triumph over France, then acknowledged to be the greatest military nation of Europe: a nation whose armies had been constantly exercised in the art of war, had within a short interval carried their conquering arms to the Crimea, Italy, China, and Mexico, and had since been armed with the most formidable weapons known—the chassepôt rifle and the mitrailleuse. True, the Prussian army had also lately gained experience and renown in the war with Austria; but common report attributed the defeat of the latter in a great degree to bad generalship and inferior armament—faults no one ever dreamed would find their counterpart in the French army. Prussia had on her side, however, a power not to be despised in these days—the power of moral force. The French ideas or motives for commencing a sanguinary war—the Rhine boundary and glory—were too apparent in this case, and naturally contributed to complete the work of German unity. If ever the German peasant felt the landwehr service system oppressive, the feeling at once gave way to grim satisfaction when he heard of the French cry, "*à Berlin.*" He recalled the miseries his kindred had endured in former French invasions of "Fatherland," and was ready for the fray.

What are the lessons to be learnt from this war and its tremendous results? Nations, parties, and individuals will necessarily view them from different standpoints; but to us, at any rate, they offer encouragement to persevere in the course of defensive volunteer armaments to which we are already fortunately so far committed; for we have seen that the German civilian soldier, who is generally occupied in industrial, mechanical, or scientific pursuits, is at least as good if not a better warrior, and that he is a safer guardian of the national honour, than he of pure military caste. And the same line of argument ought to hold good as regards our own volunteers afloat. If this be so, then fishermen and others of our seafaring population, whose means of livelihood compel them to be always engaged in perilous service on the open coast, must undoubtedly, when properly disciplined, make better defenders of *the coast* than regular men-of-war's men, who spend more than half their service time in harbour; or than the coastguard, who are only one month in twelve afloat. But we shall recur to this further on.

The continental nations of Europe are generally increasing their armies; but they are also wisely copying the Prussian system of training and tactics. We, too, are following suit in the latter with

our small army, and with great advantage to ourselves, for it is generally admitted we were behindhand, and it must be evident that if armies (or navies) are required at all, they are useful in exact proportion as they are kept efficient and ready for service. It has been seriously proposed to drill and arm the whole population as soldiers, something after the Prussian system, and it is therefore worth while to inquire what system of national defence is best suited to the character and genius of the people, and therefore likely to prove most efficient at least cost. Now, this is confessedly a difficult subject to handle. To carry it out completely requires not only special practical knowledge as a seaman, a soldier, and as an engineer, as well as genius to apply this knowledge to the purpose required; but position and courage sufficient to promulgate a plan which may be opposed to tradition and vested interests. Britain has many a statesman competent and willing to do all this; opportunity alone is wanted.

The national taste and feeling are averse to general military organization. The ordinary way of managing the national armaments is, according to the statement of an eminent politician, "to let well alone," and to permit things to run on smoothly and comfortably in a groove made by some ancient great man, until the people are roused by a fearful calamity which compels a change; or until a sudden fear of invasion from our better prepared neighbours causes a national panic. The result is generally a large expenditure of money, and a comparatively small addition to the real naval and military strength of the country, which leaves the great mass of the nation still unarmed, and liable to panic as before. The volunteer movement was a notable departure from this state of things, and initiated a healthier and more manly feeling throughout the country. The volunteer M.P. who has gained some experience of military training and tactics in the field, is certainly better able than former M.P.'s to judge what is or is not required to render our army efficient, and to advocate the best and most economical defence for the country. If any military authority were now to stand up in "the House" in defence of the old system—were, for instance, to assert, as did the Iron Duke, that "brown bess" is the best weapon for arming regiments of the line; or that tight clothing, stocks, and pipe-clay are necessary to military efficiency—there are now civilian soldiers who would argue the point, whose tongues are not likely to be tied by etiquette, or military caste. Exclusive military caste received a mortal blow in the defeat of the French armies by the civilian soldiers of Prussia. This alone is a boon conferred on the whole world by our future allies—our cousins-German.

We have reason for believing, thanks to the efforts of Mr. Cardwell, that our Army is now free from that incubus of nepotism which has

more than once brought it to the verge of destruction. Enlightened statesmanship, strengthened by the continual friction of the volunteers and regulars, will tend to keep the entire military machine bright and perfect, and necessary improvements are likely to become common. This being so, it would be a pity to check or overturn the *natural* growth of military power by the introduction of any other system. Our Army is small, compared with those of the continental powers, but it promises to be very efficient, and equal to our *defensive* requirements; but we must not forget, that if we had a million of soldiers in our islands, and were to lose our supremacy on the ocean, they could not prevent our being shorn of our commerce, and perhaps starved into submission.

As regards the Navy, in the first place, we have no powerful popular volunteer representative authority, capable of offering useful criticisms. This is a matter much to be regretted. Thanks, however, to the purity of our Administration (assisted by the Argus eyes of the press) great abuses cannot exist without being found out and remedied. There is no finer or worthier body of officers and men in the world than those composing the Royal Navy; they generally know their work well, and take a pride in doing it; yet conscientious critics have alleged that there are faults in the *system*, likely to cost us dear in any future naval war. To some of these alleged defects we will now refer. The first, which is urged with persistency, is the present division of responsibility between the captain and navigating officer, in regard to navigating and piloting the ship. We are aware that the question of maintaining a special class of officers for navigating duties has lately been officially investigated, and, on the evidence taken, has been approved; but, nevertheless, it will do no harm if we repeat some arguments brought for and against it, especially as the experience of the Mercantile Marine is decidedly against it. Here we wish it to be understood that we desire to say nothing that can be even twisted as finding fault with our Administration; but we think that the subject is still open to calm and dispassionate discussion. Where, as is too often the case, fault-finding and abuse creep in, no good can result. We find no fault—we abstain from abuse; but we wish to discuss, in a fair and generous spirit, this point, as it appears to us to be vital. Concurring in the opinion that the navigating and pilotage duties are well performed under the present system, we cannot see why they may not be equally well performed by the executive officers. If we admitted that executive officers could not navigate their ships, we should be placing them below many of their brethren in command of our merchant ships, and below the captains of every Royal Navy afloat. A change cannot be made immediately, it must be

admitted, for the executive officers are generally unacquainted with the duties of pilotage, and it cannot be otherwise, when the whole *practical* work of these duties is performed exclusively by a separate class of officers of inferior rank. So entirely is this the case that we have known an instance, amongst others, where, owing to the sickness of the navigating officer of a large ship, having a captain and six lieutenants, but no navigating sub-lieutenant, the navigation of the ship was placed in the hands of the senior navigating midshipman, a youth scarcely nineteen years of age. Here was an opportunity for a lieutenant to pick up practical knowledge; it was not turned to account, because not one of the lieutenants would or could, without losing caste, volunteer to execute the duty of an inferior officer. Thus, it has been urged, the whole system is radically bad, causing most responsible, and, we must add, most honourable duties, to be slighted and despised, and fostering ignorance, pride, and inefficiency in the service, amongst a class of officers who may one day, perhaps not distant, be called on to defend the honour of England. Of course, there will be many objections to change. The present system is, no doubt, a safe and comfortable one for *captains in time of peace*, and *they* can hardly be expected to volunteer for duties to which they have not been trained, but it may be reasonably supposed that the younger executive officers would, with proper encouragement, soon qualify, and be glad to undertake navigating and piloting duties. In case old fashioned arguments are brought forward, such as our uniform success under the present system in byegone days, it will be wise just to notice the totally different times and circumstances under which we now live. The war sailing-ship of former times, occasionally becalmed in sight of an enemy for days together, or, perhaps, slowly drifting into action, was certainly a far inferior fighting machine to the present ironclad steam-ram, running at her foe with a velocity of thirteen miles an hour. Incompetent direction, in the first case, might afterwards be, and was often, retrieved; but destruction must necessarily result from it now. Moreover, our supremacy on the ocean was undisputed in old times to which we refer, and political circumstances favoured the increase of our naval power, and the deterioration of that of our rivals—conditions no longer existing. And do not let us forget that our most successful naval commanders have, with the exception only, perhaps, of Blake, been celebrated as first-rate seamen and pilots, who were not only able to order and direct their ships in action, but actually did so, without asking the opinion or advice of anyone. Take Nelson, for example, learning seamanship and self-reliance in a West India merchant ship, and in the Polar regions, and, afterwards, still a youngster, commanding a tender at Chatham, employed principally in running between that place and the Downs. *He* never required

anyone to share his responsibility: and we may remark, by the way, that the scientific skill displayed by this great seaman and warrior, in crushing England's enemies on the ocean, was obtained in actual service afloat.

In all other navies of Europe and in America, as well as in the great ocean steam ships of our Commercial Marine, the captain, although assisted by properly qualified officers, is virtually the responsible and the *working* navigator of his ship, in many cases he is the pilot too; but in the Royal Navy of England there are very few, if any, captains who would venture to sea at all without a navigating officer; or con their own ships in or out of port or into action. If it be said that, in the matter of such important duties, two responsible heads are better than one, it may be answered on the other hand that there is now really but one *working* head—the navigating officer—and there can hardly be any necessity for argument to prove the wisdom and necessity for that head being carried on the same shoulders that bears the chief authority. The executive class are now the *superior* officers of the service, and they receive the lion's share of the honours and rewards thereof. The command of a British ship of war is a proud position for any man. Why should not those who enjoy it qualify themselves for its responsibilities under all circumstances? Why should they be less able to navigate their ship than a master mariner in the service of Mr. Inman or Mr. Green? As, for obvious reasons, it is difficult to obtain in the service any other than a one-sided view of this question, we will endeavour to illustrate the probable disadvantages of the system as they appear to an officer of considerable experience, who, not having any personal interest in the question, is only desirous of elucidating the truth.

And here again we wish to repeat that it is not the brave men who are officers of our fleet that we wish to disparage. If we for a moment believed that we should be taken as discrediting them, or as finding fault with authority, we should be silent. We merely wish to put the case as it has been represented to us by no mean authority on the question under discussion.

Let us, for argument sake, suppose a great naval battle to take place between our fleet and another. Seamanship in relation to manœuvring having been, in a measure, superseded by steam tactics, both fleets may be assumed to be nearly on a level as to practical knowledge, and the enemy feeling this to be so, possesses confidence never possessed before by our opponents, and is as willing as ourselves to bring on a close and decisive action. The fleets, therefore, approach each other rapidly, amidst a tremendous cannonade. But as one or more ships on each side become disabled, new dispositions and new combina-

tions have to be made to succour friends and complete the distruction of foes. It is at this stage of the battle that our difficulties are, from our point of view, likely to begin. With two large fleets of steamers, curving and circling round each other at full speed, in close action, there will be but little time and less opportunity for an admiral to direct any ship but his own. Even supposing he could see through the dense cloud of smoke, and steam enveloping the combatants, the continually changing position of the ships would render such attempts fruitless. On very little reflection it must be evident that in such cases each ship must be directed by her own officers. The staff-commander or other senior navigating officer of each ship has, we will assume, had, until the day of action, all the usual monopoly of practice in piloting, and has turned it to good account, consequently he will know exactly what his vessel can or cannot do in manœuvring, but the captains generally, having had no such actual practice, must know less, and may know nothing about it. Will the practical and theoretical officer, when his ship is engaged in close action, agree on speculative points of conduct, involving perhaps the destruction of his own ship, or that of a near enemy, in time to save the one or destroy the other? Let us reflect what "full speed," under steam in the above circumstances, really is; and that slow speed ships are pretty certain to be rammed or torpedoed, unless they are smartly and cleverly handled, and we must admit the necessity for looking well into this subject. And what if our navigating officer be slain when in close action, will the navigating sub-lieutenant be summoned on deck, from charge of the hold, to con the ship, perhaps for the first time in his life?

Who among us can doubt that there is still room for anxiety, or at least inquiry on this subject; particularly when we know that in foreign navies the same officer, whose matured practical knowledge and judgment directs the course of the ship (the captain), possesses absolute power and sufficient experience to alter it instantly, as he may judge necessary or expedient, in defence or attack; and that if he be slain, his place will be taken by another officer similarly trained, perhaps but little less experienced, and possessed of the same absolute power.

We cannot be too emphatic in insisting on the necessity for a dispassionate discussion of this question, the more so as it will be a most difficult thing to procure evidence opposed to the present system; for what navigating officer would give evidence involving a charge of incompetency against his captain, for whom probably he may entertain the highest regard and respect? Then, again, the advancement of the navigating officer is entirely in the hands of the executives, and who would be so foolhardy as to lay a charge at the door of anyone? Therefore it would be neither right nor politic to probe too deeply for evidence in this direction in the service; we must rather discuss

the matter as an abstract question, merely bringing to our aid such evidence as is afforded by the navies of foreign countries and our own Mercantile Marine.

It is to be feared that the majority of men, excepting, perhaps, Americans and Germans, prefer looking to the past for example, guidance, and comfort, rather than to the present and future. "What has been will be," is a favourite maxim with most of us; and often and generally affords us sufficient standing ground on which to "rest and be thankful." As a nation we prefer to reflect on the *Victory* or "fighting *Temeraire*" at Trafalgar, lying almost like logs on the water, and pounding away at enemies' ships on each side, ahead and astern, and finally coming out of the ordeal comparatively speaking but little the worse, to the short unromantic and sharp naval battle of the future between fleets of huge ironclad steam "rams," armed with ponderous guns such as our fathers never dreamed of, circling round each other at a speed of thirteen miles an hour, and eagerly watching an opportunity to ram or torpedo each other.

The remedy for the apprehended evils here foreshadowed is obvious, safe, and simple, and has been already hinted at; but who is to apply it? Our present administration is the only administration we have ever had, strong enough for the task. The nation already owes it, especially in the person of Mr. Childers, a debt of gratitude for a just naval retirement scheme as well as for important Admiralty reforms, and, therefore, any reforms now advised by him or the present First Lord, would probably meet with general approval.

Another important subject closely connected with that already considered, and involving the efficiency of the navigating class of officers as pilots, is the want of official assistance and encouragement to young officers in learning pilotage. The navigating class are required to pass an examination as pilots for the English channel and ports on our south coast; but no assistance is afforded them in learning the practical part of their duty, so that the zealous officer must occasionally go about in private vessels, fishing smacks, &c., at his own expense for this purpose, or be content to find himself one day in charge of a ship "with about as much practical knowledge as a parrot." The safe conduct of a ship of war is at least as important as her gunnery efficiency, yet there is practical training, at vast expense, for one, and none whatever for the other. The theory and practice of proper training for pilotage duties has never yet received the attention they deserve, and their importance is not, therefore, generally understood.

The *good* pilots, the first-class men required to guide our valuable war ships, must, of necessity, be thorough seamen, and not only in possession of scientific knowledge whereon to base correct judgment, but

fertile in resource gained by actual experience. Many such officers we undoubtedly have, thanks to the natural aptitude of Britons for the work, but many more are still required, and might be obtained under a system of encouragement.

In a matter of such vast importance to the naval service as the proper training of officers, it would be wise to look around and see what has been going on lately among foreigners. Who does not remember the occasional criticisms of a portion of our press a few years since, on the then King of Prussia, now Emperor of Germany? His strict attention to the detail of minor military matters was then satirically alluded to as being "worthy the attention of a drill serjeant," but now it is known that, under his system, Prussian military officers are employed in acquiring professional knowledge and experience wherever it is to be found, campaigning in actual warfare in America, or sketching and mapping the territory of a prospective enemy nearer home, all extol his prescient wisdom. What if foreigners have taken the Prussian military lesson to heart, and applied it to their naval system, and we remain *in statu quo?* Some future day may possibly see an enemy's fleet on our eastern coasts, piloted by their own officers, and our fleet in the Downs, waiting for north sea pilots to conduct our ships to the attack. It may be noticed here that Americans have long been accustomed to make their naval officers serve some time on their coast surveys, and with confessedly good results to their naval service, and the continental nations are said to be now generally busy in establishing naval training colleges near the sea, and training ships upon it.

There can, it is alleged, be no reasonable doubt that the officers charged with the very responsible duty of piloting our ships of war, might have every facility afforded them of obtaining *practical* knowledge of it. Amongst other schemes, it has been suggested, that a small steamer should be specially appropriated to the purpose. The commander of such steamer to be an experienced surveying officer who has seen foreign service as a navigating officer. The educational course to be limited to our own coasts, and the season's cruise to embrace—1st. The channel and south coast, and channel islands. 2nd. The east coast. 3rd. The Irish sea. Other parts are comparatively unimportant. A sub-lieutenant and twelve seamen would be a very good establishment for this pilot steamer, but she would, of course, require extensive cabin accommodation for the student officers. Further, it appears, and has been suggested, that a good plan would also be to require young naval officers to serve on board the steam vessels belonging to the Trinity House and other pilotage bodies, and assist in the duty of laying down buoys and sounding channels. And there can be no doubt that if full pay were given to naval officers who serve as masters of

British merchant steam ships, it would be a cheap way of getting valuable knowledge for the country, and would be better for the country than leaving those officers to waste their time on shore, idle on half pay.

Now, with regard to our training hulks. Training hulks are undoubtedly capital things for the purpose for which they were first instituted, that is, for encouraging cleanly, sober, and orderly habits, and nautical tastes, amongst our street arab population, destitute of home and parental care; but we can hardly expect our future Nelsons to spring from such institutions. The new Greenwich College, which is a most important step in the right direction, will certainly become a most useful institution for the higher scientific education now required for a *commissioned* officer; but we cannot but think that that establishment will be of far greater use if its pupils also have the benefit of actual practice. Its usefulness might be greatly extended if officers of the Mercantile Marine could also enter themselves for a course of study there. "*Seamen* will always be masters of the sea." No matter what progress science may make, *they* will always be found practically and intuitively able, although perhaps not scientifically competent to demonstrate the fact of their supremacy on their own element; and no one knows and feels this better than the practical seaman himself.

Manning the Navy in time of war is another subject requiring consideration. In the event of a great naval defeat, we can now, as we always could, *command* the services of our merchant seamen, but they will be useless unless trained, and our reserves are still insufficient for our probable requirements in defending our coasts and commerce, even though we maintain our old supremacy on the ocean. At one time the British flag might be met with in every sea, upheld by British seamen. It is not so now, and it cannot be wholly so any longer. Our shipping has increased, but no longer represents British power, and the vast national wealth afloat on the ocean is now, to a certain extent, in the power of foreigners.

Our merchant seamen are not, as in some other countries, wholly a reserve for the Navy in time of war. We have, indeed, gone much in the right direction, for we have embodied the *élite* of merchant seamen, 11,000 in number, as a Naval Reserve, and we have drilled them well, but they are, collectively, still a small body in comparison with the 800,000 sailing under our flag, and as they are scattered all over the globe, it is doubtful whether we could immediately assemble more than 6,000 on any occasion of necessity on our coasts. Although they do not cost the nation more than about one-fourth the expense per man of a regular man-o'-warsman, yet it is often urged that in consideration of the small number likely to be at once available on an emergency for *home defence*,

they must be considered as an expensive force for *that* purpose. Nevertheless, the money spent on this force is directly and indirectly very profitably invested, since it induces the pick of our seamen to make England their head-quarters, and is the means of training them to disciplined, self-reliant, and warlike habits.

Our coastguard force is sometimes spoken of as Naval Reserve, but the term is scarcely applicable in its true sense, for in time of war they would be directly embarked in their proper ships, and might be engaged in conflict with the enemy before any of our cruising squadrons could come into action. And it may be further remarked that considering the small number composing this force and the very large vessels in which they are embarked, the term "*coastguard*" is more appropriate in time of peace—that is, the force at hand to protect the coast.

We have now shown that the question of navigating officers is one still open to fair discussion, and that the training of our officers may be improved; that, although the right spirit has animated our Administration in regard to the "Naval Reserve," our Naval defences are still insufficient to meet a great emergency; and that the continual changes and improvements in the material of war, by which seamanship is simplified, and to a great extent superseded by steam, is not to our exclusive advantage. We now submit whether our empire of the seas may not be, and that at no distant day, disputed by other nations now perhaps *quietly* engaged in training their officers and in enrolling reserves for the purpose. At present we know "*prestige*" is on our side, and so, we may hope, is actual strength—men and material of war; but let us remember that the French believed themselves to be, on land, in a similar advantageous position before the late war with Prussia; nevertheless, their formidable mitrailleuses, chassepôts, and military *prestige*, all went down before the unexpectedly better prepared condition and superior intelligence of the citizen amateur soldiers of Prussia.

There is a great future in prospect for England, and she must be strong, not in aggressive but in *defensive* power, and this strength must be *felt by our own people* to be so real that when insolent would-be foes threaten us with sending their war ships to collect an indemnity on our shores, or with invasion, we, and all the world may know and feel it to be a vain boast. This state of national security must be undertaken by *the nation*, as was the volunteer movement. An irregular force is required for the defence of the coast, and the available material being mostly poor men unconnected with the Navy, Army, or Volunteers, cannot expect sympathy or assistance from either of those bodies until their efficiency has been proved, when the helping hand will be extended to them from every direction.

The best and least expensive defenders of our sea coast are now living there. There are the 100,000 fishermen, pilots, &c., now scattered all round our coasts. If they are drilled and supplied with *suitable* vessels, Gatling guns and rifles, under the direction of competent officers, we shall not hear anything more about invasion. A naval officer has stated that our large Navy, as at present constituted, cannot guard our coasts efficiently in war time. This is true, and besides being true, is as well, and perhaps better, known to foreigners than to ourselves. We may for argument sake admit the fact, without in any way disparaging that gallant arm whose special mission it has always been to maintain our supremacy on the ocean, and attack our enemies on their own coasts. Let us examine the reasons why it is so.

1. Large as our Navy is we have not vessels enough to guard our coast from attack. 2. Our vessels are generally of too heavy draught, and altogether too cumbersome and unhandy to enter many ports along our coasts, where the presence of ships would be required in war time, and no dependence could be placed on those unable to do so, as they would probably be driven from their stations in bad weather. 3. Want of local knowledge might be expected frequently to paralyse prompt and vigorous action, as it has done before; notably in the last Russian war at Petropoloski, &c. 4. The filtration of orders through the head-quarters, commander-in-chief, senior officer present, &c., &c. might occasionally be productive of mischievous delay in action. 5. The duty of covering our coast-line from attack would be committed to one person who would certainly be practically ignorant of its navigation or the peculiar features of each bit of coast. And the authorities at head-quarters might occasionally be misled by false intelligence to withdraw vessels from the coast for the purpose of effecting combinations elsewhere, and thus an enemy might gain easy access to our shores and burn our coast towns and merchant shipping almost without opposition.

It is very undesirable to increase our regular Navy. To say nothing of the mischief of keeping a very large body of men comparatively idle, on the chance of their being required, we could never stand the enormous expense of the continual reconstruction of a much larger active Navy than we possess. But a purely *defensive* force for the coast could be easily, economically, and efficiently organised without any of the above resulting evils. Such a force is promised by the present First Lord of the Admiralty.

We will conclude this part of the subject by an illustration of coast defence as it would probably be *now* conducted.

Let us suppose the presence of some of the enemy's cruisers on different parts of our coasts, simultaneously with the arrival of news of

their concentrating a fleet at some part of their own coasts where they would have to be looked after immediately, what would be done? Should we be equal to the double duty of guarding our own coast and attacking the enemy in his own port? It may be argued that we have our coast guard and plenty of torpedoes; but the former, it must be remembered, are on the books of a few large ships. Torpedoes are likely to prove valuable *auxiliaries* in coast defence, but they will be of but little use alone, as any adventurous seaman commanding an enemy's ship would soon find means to fish them up, if not protected by batteries or vessels of war; we may further, and lastly, notice our Naval Reserve of merchant seamen, to remark that valuable, as they are, they would not help us materially in the subject of coast defence. We have not, in fact, any regular *system* for *coast* defence, where it is generally admitted defence is most easy; and, as we have seen, that in war all our present reserves would be embarked to strengthen the active fleet, it is probable that the exigencies of the service might denude part of our coast entirely of protection. If an enemy's war ship were to make her appearance there at such a time, the nearest authority would, of course, telegraph the news to the Admiralty, who would probably telegraph orders to one of the naval ports for disposable vessels to be sent in pursuit of the enemy *immediately;* but the delay caused by the distance to be traversed by the pursuing vessel, and, perhaps, by her having to wait for a pilot, would render the chances of catching the enemy about on a par with the attempts of the Federal vessels to catch the Confederate cruisers in the late American civil-war; therefore, it must be admitted, that our coasting trade and unprotected coast towns would probably be destroyed in the next war, unless we set to with a will to organize Mr. Goschen's promised system, of coast defence.

We want to circle our islands with a defensive chain of volunteers who shall not be withdrawn from the industry of the country, but who shall be capable of barring enemies from landing on our coast, and protecting our own and friendly vessels sailing near it. This chain must necessarily be light, but it should be flexible and capable of expansion or compression, to protect friends or crush foes; a chain within which the inhabitants of our islands may rest as securely in war as in peace, and which, although it may be light, we shall know and feel to be strong enough to trip up the heels of an invading army in the act of landing on our coast, and paralyze their action until by its compression, or doubling up on the enemy from either side of the scene of conflict, its destruction is ensured. Such a force would be worthy of a great maritime nation, and such a *defensive* force we can have for a very inconsiderable sum of money compared to the expense of our regular Navy.

The men of the force required for coast defence are already living near

the places they would have to defend. They now generally earn but a precarious and scanty subsistence as fishermen. Provided they be spoken to kindly, that their drills are arranged to take place in the dull fishing season so as not to interfere with their business, there can be no doubt that 100,000, or 150,000, of these fine fellows might be almost immediately enlisted for coast defence, *in their own district*, for a less sum per man than we now pay our Naval Reserve of merchant seamen. This reserve has, by the way, been highly extolled as a cheap and efficient system; we agree that, for reasons already stated, it is worth its cost, although, in regard to economy and efficiency for coast defence, very inferior to the plan we advocate. If anyone should object to enrol and pay a force such as is here proposed, because it is to be a strictly local force, let him look at the civilian soldiers of Prussia, and he will see proof sufficient to feel assured that, when men are disciplined and trained to arms it is not difficult to get them to go anywhere in pursuit of an enemy. And, indeed, we should not be surprised if our coastguard flotilla eventually formed a splendid reserve for the regular Navy. We speak with some knowledge of the class of men and their many good qualities.

The entry and drilling of our coast defence volunteers should commence immediately, for, no matter what vessel they may have to fight in, it is certain that heavy artillery, Gatling guns, breech-loading rifles, and pistols will sure to be in fashion, and disciplined habits must be formed in those who are intended to use them.

We would advise commencing operations by sending a number of intelligent officers to ascertain the sentiments of the people we desire to enlist and explain the conditions of the Government. In drawing up these conditions it must be considered, that the more strictly local the force the more men we shall obtain for the service, and the less they will cost. It will be necessary to parcel the coast into districts, suitable to circumstances, each district to be again subdivided into stations—say, of the first, second, and third class. Superior officers would not be required to command districts in the early stage of the movement, but eventually commanders, or captains in the Navy, would be advisable for such offices, and none but competent officers who have seen good foreign service should be employed. The district commander should reside at No. 1 station, and the inferior officers be located in positions suitable for the efficient control and management of the force. A few petty officers, gunners, and seamen, would be required to act as ship-keepers and guards over the coast defence vessels when they are not actively employed, and this nucleus of each district force would find ample occupation in these and other duties now performed by our coastguard. In short, the intention is to reorganise the present coastguard, and render it a permanent institution; to turn out those who have not seen foreign service,

and all useless characters, substituting for them the cream of the service, both of officers and men, who have served their country long and faithfully afloat. We may here notice the fact that after twenty or thirty years, the best seamen would feel grateful to be relieved from that incessant activity inseparable from service afloat, and it is precisely this veteran class that would make the best leaven for our coast population; and, on the other hand, the rising generation of our coast population seeing such a substantial reward for good service, might be induced to volunteer freely for the Navy afloat. We should thus foster a loyal and warlike people round our coasts, of inestimable value in the interests of our coasting trade, general commerce, and the freedom of the seas, and perhaps solve the question of manning the Navy.

Vessels of various forms would be required for the coast defence to suit the peculiarities of different stations, but the *Monitor* would be the most desirable for the first-class district vessel, with perhaps a gunboat of the *Staunch* class and a fast torpedo vessel. The latter ought to be commanded by a competent navigating officer, and perform all the pilotage duties, shifting buoys, &c., &c., now under direction of the Trinity House. The officers should be compelled to make themselves thoroughly acquainted with the topography and pilotage of their own district, and report any inaccuracies in the coast charts to the Hydrographer. The District Trinity House vessels, now scattered round our coasts for the purpose of shifting buoys, and attending on lighthouses, and light vessels, might be advantageously incorporated in the coast defence service; but this would be a difficult matter to arrange until it can be simplified by abolishing these separate establishments entirely, and administering their duties through a Central Department.

Enough has been written to show that in our coast population we possess enormous latent, defensive power, capable of being easily and economically applied to the defence of our coast, which, of course, also includes the defence of our coasting and other trading vessels sailing near our shores, as well as our manufacturing establishments scattered along them. We believe that the same gallant hearts that man our coast lifeboats to save foreigners (equally with our own countrymen) from going to the bottom, will, under proper training, be able to send our foes there in the most expeditious manner possible. Amongst our other available resources for coast defence, may be reckoned our unemployed naval officers, and the corps of naval artillery volunteers lately incorporated. France has already incorporated her coast population, as well as her seamen for coast defence and Naval Reserves. Germany, it is said, registers all her seamen, and allows them to train themselves at their own expense in foreign service, knowing that she can recall them for service of the State at any time. Russia and other Continental powers are straining every nerve to increase

their navies. England alone, whose very existence as a great power depends upon her maritime supremacy, makes no effort to secure the desired object.

We will conclude this paper with a sketch of what might be considered a desirable arrangement for the defence of our western coasts and the Irish Sea. The principal stations in their order of importance are :—1. Milford Haven, for general defence of Bristol Channel, and West Coast of England, including the northern shore of the British Channel, to Holyhead. 2. Liverpool. 3. Belfast. 4. Queenstown. 5. Bristol. 6. Kingstown.

Secondary stations should be established between these places as the force increased.

As there would not be any absolute necessity for such coast defences at the outlying points of our islands, where an enemy could not strike at the vital parts of our Empire, the northern and western parts of Scotland, and the West Coast of Ireland might be left out of this scheme.

With the plan here roughly sketched out in operation, as the commander of each district would be entirely responsible for the security of his coast if any enemy threatened it, that officer's duty would be simple and unmistakeable; he would not have to wait for orders, or for reinforcements, or for anything; but would be expected to attack the enemy without delay, and make the best fight he could under the circumstances.

We are glad to find that Mr. Thomas Brassey, M.P., has taken up the subject of our Naval Reserves. He has published two pamphlets, both readable and both good. If he will continue to devote his vigorous intellect to the subject, and will just give up one or two crotchets, much will be done. The late Mr. Graves, M.P. for Liverpool, has also, as our readers are aware, made a serious move once or twice. We regret for the good of the country that he will never make another. Mr. Brassey, in his last pamphlet, points to several "weak things" in our present Reserve regulations. One of them—to which he gives special prominence—is that our Naval Reserve men are still being drilled with old smooth-bore 32-pounder guns, and are also, in some cases, drilled in hulks in a dock where even those antiquated guns can never be run out, and *can never be fired*. The British taxpayer, therefore, having first paid a large sum of money to get Naval Reserve men together, and having got them, has carefully stowed some of them in a hulk in a dock, where he pays them to go through certain drill that is known by every practical officer in the service to be absolutely worthless.

NAPOLEON III., EMPEROR OF FRANCE.

Born at the Tuilleries, 20th April, 1808. Died at Chiselhurst, 9th January, 1873.

THE *Nautical Magazine*, identified as it has been for forty years with commercial interests, pays a tribute of respect to the great man who has just ended his days on our peaceful island. While we write, Louis Napoleon lies dead at Chiselhurst. As an ally of England, as a disciple of Free Trade, England mourns his loss. Under his rule the red ensign was encouraged in every French port, and the "yo-heave-ho" of the British sailor was a sound no less welcome than it was familiar. Unquestionably he has done more than any man to contribute to the commercial prosperity and well-being of France, and if his loss is not now mourned there, his name will be recalled by the French nation when they are once again in a proper frame to remember benefits with gratitude.

Peculiar ties connected him with England. He spent many years of his life here as a useful citizen and a friend of order. The lessons he learnt with us enabled him to do much for France that he could not otherwise have done. He was successful in blotting out that fierce hatred which had so long existed between the peoples of the two countries, a hatred so deep that even amongst school-boys contending factions assumed the titles of "French and English," a hatred that under his enlightened policy gave way to an alliance almost brotherly. Every engagement entered into by France with us was kept by him in unimpeachable good faith. The amiable and accomplished woman who now mourns his loss is a direct descendant from an old Scotch family. These things alone fill us with sympathy. Englishmen, it is true, can never reconcile to their own minds some of the steps taken by him as President of the Republic, but we can never appreciate, still less fully understand the difference between the necessity for vigorous and extreme action in a country of revolutions such as France, and in a country of reformations like our own. Of one thing we may be assured: what he did he believed to be best for France at the time. That he was not wrong in this is certain from the fact that he was afterwards elected "Emperor, by the universal will of the people," and that France afterwards enjoyed an unexampled period of peace and prosperity. It was mainly owing to Napoleon III. that the country which proved ungrateful to him was able to pay off the debt inflicted on her by Germany after the late war; a war brought about, not by the Emperor, but by the army and the people. To throw the entire blame

on Napoleon III. of the late disastrous war, would be to commit an error in which ignorance would be equalled by injustice. The people and the army wished for war, and the Emperor gave way, for he was powerless to act in accordance with his calmer and more accurate judgment. When he had once taken the step, and his hand was away from the helm, defeat followed. Scoundrelism watched its opportunity, and ruffianism gained the upper hand in French cities. The hordes who had been punished on the 2nd December, came once more to the surface, and retaliated on the city their Master had beautified. To have kept these scoundrels in subjection to the advantage of well-ordered people for twenty years, was no small labour.

Whatever Frenchmen may say now, history has recorded the fact that twenty years ago they universally chose Napoleon III., over all other men, as their fittest ruler; and history will record that the wisdom of their choice was established by the unparalleled prosperity that followed it. No man and no nation is altogether wise. That the late Emperor did err, and on one or two occasions err seriously, is patent; but notwithstanding these errors it will be difficult for posterity to trace, in the whole history of France, any period of twenty years in which the industrious and well-ordered amongst the people fared so well, and lived so peaceably and securely, or in which enterprise and commerce extended, as they did under his reign.

He governed a gay, volatile, thoughtless, excitable, and dangerous people excellently well; although in many ways he pandered to their frivolous tastes. He bowed down with them to the fetish of military glory, and satisfied their cravings of national vanity with pompous and mysterious utterances. He governed France adroitly, if not in accordance with high principles. The very character of the people required that the liberty given with one hand, should be taken away with the other; and if under his rule the morals of the people did not improve, and physical and mental degeneration made alarming progress, we must remember that the people were not themselves without faults.

American Marine.—At a recent meeting of the New York Chamber of Commerce, several resolutions were adopted, among which was one asking Congress to prohibit steam vessels from throwing ashes into the waters of any United States ports; and another to the effect that the Chamber respectfully ask the Secretary of the Treasury to recommend the adoption, in the Mercantile Marine of the United States, of the *Commercial Code of Signals*, as now in use by the Navy and all other commercial nations.

SABLE ISLAND, NOVA SCOTIA.

By William Smith, Esq., Deputy Minister of Marine of Canada.

On the 18th of July, 1870, I embarked at Pictou, Nova Scotia, on board the Canadian Government steamer, *Lady Head*, Captain Scott, R.N., commander, for Sable Island, which is situated in the Atlantic Ocean, about eighty-five miles from the lighthouse on Whitehead Island, Nova Scotia, and about 150 miles north-eastward of Halifax.

This island, though little known to the outside world, is familiar to mariners as a long, narrow, sandy elevation, formed of two nearly parallel ridges, somewhat in the form of a crescent, concave to the northward, and meeting in a point at either end, with sand bars or spits running out from them, over which the sea breaks with great fury during stormy weather. It is about twenty-two miles in length, and scarcely exceeds one mile in breadth, in the widest part. In some places it is wholly or partially covered with coarse grass and wild peas; in others, scooped out by the winds into crater-shaped hollows, or thrown up into sandhills, none exceeding in height seventy-five feet above high water. In the middle of it, and between the ridges there is a long, narrow, salt-water lake, about fourteen miles long, toward which, on the south, the sea is gradually encroaching, sweeping, in heavy gales, completely over the bank of sand which separates it from the ocean, and, on some occasions, has been known even to wash seals into the water of the lake. When seen from the north, at a distance of nine or ten miles, the island presents the appearance of a long range of sand hills, some of them white as snow; from the south the range has a more continuous appearance, and on the west end sinks very low. These sand hills have in many places formed steep cliffs next the sea, whilst in others they are covered with coarse grass, and defended by a broad beach, which, however, cannot be reached without passing over ridges of sand, covered only with a few feet of water. These ridges, which are parallel to the shore, at distances not exceeding one-third of a mile, are dangerous to pass in boats when there is any sea running. Not a stone is to be seen on the island, nor a pebble of even the size of a pea; no trees or shrubs of sufficient height to cast a shadow; only a little withe wood and stunted brush. Efforts, however, are now being made to cultivate willows and other trees, suited to such a locality.

The island has long been a terror to mariners, who give it a wide berth, more particularly at night, as in the event of a vessel striking on it, or on either of the bars projecting from it, it is almost certain to be

doomed to destruction. Up to this year, neither a lighthouse nor a fog-signal have been placed on it. Unless driven thither by stress of weather, few vessels approach its dangerous shores, except fishing schooners, and such as may carry provisions and stores to the island for the use of the Humane Establishment maintained there for the purpose of rendering assistance to shipwrecked crews who may be thrown upon the island. This establishment is maintained by the Canadian and British Governments, jointly, the contribution from the Imperial Government being made on the grounds that the Humane Establishment is maintained, not for the benefit of Nova Scotia, of which the island forms a part, or of Dominion vessels alone, but for the good of ships of all nations, passing in its vicinity, the majority of which are British.

The chief station is situated on the north side of the island, between the salt water lake, and the beach, about six miles from the west end, and consists of a house for the superintendent and his family, buildings for the men, and the occasional accommodation of shipwrecked persons, for storing provisions and other property saved from wrecks, workshops, large stables, and barns. At the west end there is a small house of refuge half buried in the drifting sand, and in this small building, which would afford temporary shelter to castaways, there is kept a small supply of biscuit and water, fuel, matches, &c., with directions how to proceed to the main station for assistance. As rats are numerous on the island, more particularly about the houses and stations of refuge, the biscuit is suspended in tin cans from the roof to keep it from these vermin. None of the staff are located here, but it is visited frequently from the main station. The number of persons maintained on the island by Government this year, including the families of some of the staff, was about thirty. The staff usually consists of a superintendent and sixteen men, one or two of whom are generally mechanics, and are employed to repair the buildings and do other necessary work on the island. No person is permitted to reside there without authority from the Canadian Minister of Marine; but applications for employment on this humane service have been sometimes numerous, as the men are well fed, and their duties are not heavy. Recently, however, it has been somewhat difficult to procure good men for the island staff, owing to the high price of labour on the mainland, and the low rate of wages offered for service on the island, the ordinary hands only receiving twelve dollars per month, with their board and lodging. The life, however, is one of dull monotony and isolation, the daily routine of which is varied only by a wreck, a seal hunt, or the welcome arrival of the Government vessel, which periodically visits the island to carry supplies, and bring off wrecked seamen if any. A hospitable welcome always awaits the stranger, be he a Government officer, casual visitor, or a castaway. Mr. Dodd, the superintendent, is a

very intelligent officer, who, by his interesting anecdotes about the island, the wrecks which have occurred there, and other subjects connected with the spot, renders a visit to his quarters very entertaining.

No wrecks can take place on the island at a greater distance than six miles from some one of the posts, and in the event of a wreck occurring, the outposts report by signal to the superintendent at the principal establishment. Besides the main station, which is the residence of the superintendent, about six or seven miles from the west end, there are three other stations where some of the staff are located, one at the east end, one at the foot of the lake, and one about the centre of the island, which was recently moved from the south to the north side of the lake in consequence of the serious inroads being made on the dwelling house and buildings by the sea. The men at the outposts make regular patrols round the island on horseback at stated periods to look out for wrecks and render assistance, if needed, in saving life and property, and send a report of their rounds to head-quarters. Life and serf boats are kept on the island, and a good supply of tame horses for hauling the boats to such quarter as they may be wanted, as well as for the use of the patrols. Rockets and mortar apparatus are also kept there for the purpose of carrying lines from the shore to wrecked or stranded vessels.

The several buildings of the principal station of the relief establishment are ranged in an irregular square, round the house of the superintendent. Conspicuous over all is a flag staff and crow's nest, from which a large portion of the island can be scanned in clear weather. The various buildings are constructed of thick plank to resist the violence of the storms, whilst everywhere, on chimney piece, doorpost, and gable, some mute waif from the sea is at hand. The ornaments of the cottages are the nameboards of vessels, which have been washed ashore, and on the gable end of the home for sailors is a board, on which is conspicuous in large letters the simple word "HOPE." In the boat-houses are metallic lifeboats with mortars and lines, hawsers and signal guns. There is a library of some five hundred volumes on the island, besides which there is many a volume whose stained leaves and shrunken covers show that they are offerings from the sea.

The bar stretching out from the west end dries about three-quarters of a mile at low tide, with from nine to sixteen miles of breakers, according to the weather showing the remainder of its course, which is N.W. half N. for the first twelve miles, and then W. by N. for the remaining distance. The east bar dries about four miles, succeeded by eight or nine miles of heavy breakers. Its direction is N.E. by E. half E. for the first seven miles, beyond which it curves gradually till it terminates at E.S.E. Both the bars are extremely steep on the north side, the east bar especially so, having thirty fathoms water close to it. To the south-

ward, on the contrary, the water deepens gradually for many miles, a fact which renders it difficult to account for the great number of wrecks on that side of the island, unless they are to be attributed to the neglect of heaving the lead. The average number of ascertained wrecks on Sable Island for some years past has been about two annually, but there is often sad evidence of additional losses on the bars, especially after a long continuance of foggy weather, in the shape of fragments of vessels, or of their cargoes coming ashore. There is too much reason to believe that many a good vessel has come to an untimely end on these bars, without one of her crew surviving to tell the tale, and with little more notice than a brief announcement in the newspapers, that such a vessel left a certain port on a particular day and has not since been heard of. It is a somewhat curious fact that for several years the land has been gradually washing away on the south side of the island, while new land is making by degrees on the bar at the east end, on which vegetation is now beginning to show itself.

When Government vessels leave Halifax or any other ports of Nova Scotia for Sable Island, they generally run for Whitehaven, a safe harbour to the eastward of Halifax, where they lie until a suitable opportunity offers for making the island, that being the nearest point on the mainland where vessels can lie in safety. On the occasion of my visit, we left Whitehaven at 6 p.m. on Sunday, the 19th July, 1870, weather calm and pleasant. At daylight next morning we were in the vicinity of our destination, with a dense fog prevailing which prevented us from sighting it. Captain Scott, our worthy commander, was walking the deck uneasily with his marine glass in his hands, and looking as if he had the responsibility of the whole Dominion Government on his shoulders, whilst some of the crew were busy taking soundings from time to time. At about 5 a.m. we dropped anchor on the north side, a slight breeze blowing from the southward, and I left the steamer in a small boat, under the charge of the chief mate. Our skipper promised to keep the whistle sounding from time to time so as to enable us to reach the steamer again should the fog prevent us from finding the island, or effecting a landing. We soon lost sight of the *Lady Head* and found ourselves amongst a herd of seals which flocked around the boat, and kept us company till we landed. These animals looked like a crowd of bathers swimming around. It was not long before we heard the roaring sound of the surf, and as we neared the beach, the fog lifted somewhat, and revealed the island to us. We soon landed with the assistance of some of the men belonging to the station, who, running into the water, hauled our boat out of the surf, up on to the beach, where we met the superintendent, who had heard the sound of the steamer's whistle and was looking for a visit from some of her officers.

If the wind is from the south, when a vessel approaches the island, the landing is generally effected on the north side, near the main station; but if the wind is from the opposite quarter, the vessel must go to the south side for shelter. In strong winds and high seas it is extremely hazardous to attempt a landing at all, or for the vessel to approach too near its dangerous shores. If a steamer, she should run for Whitehaven, and wait a more favourable opportunity; if under sail, she should get clear of the bars and lie to some distance off under the lee of the island. Mariners generally have great objections to be employed in this service, more particularly in sailing vessels, or at any time of the year before the month of June or after the month of August. It must be admitted that there is good ground for their objections and fears, as in the event of a sailing vessel being anchored off the main station on the north side, and a strong gale setting in from that quarter, the vessel would have but little chance of holding on during the heavy seas that rise there; should she slip her anchor and attempt to beat off the island, the probability is she would not be able to clear the bars, and there would be little hope of escape for her and her crew. Accidents occasionally happen to vessels whilst supplying the island with stores, or visiting it for other purposes. On a recent occasion, and only a short time after my visit to the island, a schooner, named the *Ocean Traveller*, was sent over from Halifax with a cargo of provisions, supplies, and cattle, commanded by Captain O'Brien, formerly master of the Government cutter *Daring*. The *Ocean Traveller* left Halifax on the 28th September, 1870, for the island, having on board a crew of eight persons besides the captain, all hired by the Department of Marine for the voyage. After being some time at sea, and meeting with stormy weather, and no opportunity presenting itself of approaching the island with safety, the schooner returned to Halifax on the 8th of October. The weather moderating to some extent, she again proceeded on her voyage, and on the 18th of the same month the cattle and supplies were safely landed, after which she immediately left with her crew of nine, all told, and a young man, the son of one of the staff on the island. Directly after leaving, a heavy gale arose, and it is supposed she either struck on one of the sand bars, foundered, or capsized, as not a soul of those on board survived to tell the tale, and no trace of her or anything belonging to her was subsequently found. The Government of Canada made handsome gratuities to the widow of the captain and such of the relatives of the crew as stood in need of assistance. This accident by no means tended to divest the island of that dread which previously existed in the minds of many seafaring men who knew something of its treacherous sandbars and currents, and it is now even more difficult than it formerly was to obtain crews and officers to visit that station in sailing vessels, on account of the danger which they consider is connected with the service.

No lights have previously to this time been exhibited on Sable Island, as doubts have always existed hitherto as to whether the establishing of such, either at one or both ends, would not be more dangerous to shipping than if there were none, the opinion being held on the one hand that vessels ought to give the island so wide a berth that the lights would not be visible, and that if even they came within sight of them, that fact might tend to draw them near to the sandbars extending from it in the hope of making the light, thereby incurring a risk and danger which would be avoided if there were no inducement to approach or make the island. It has been asserted, on the other hand, that if a powerful light were exhibited on each end of Sable Island—one a fixed white light, and the other a revolving white light—they would be visible at a distance of twenty miles or upwards, quite far enough to warn vessels of their danger, and to enable them to define their exact position in a dark or stormy night, when otherwise they might have lost their reckoning.

In 1848, the Honourable Joseph Howe, of Nova Scotia, now one of the Secretaries of State of the Dominion of Canada, visited this spot for the purpose of making a personal observation of the island. In a report laid by him before the House of Assembly of that province in 1851, the hon. gentleman stated that although Mr. Cunard, the senior commissioner of lighthouses, and Captain Darby, the commander of the Government cutter then in use, entertained the belief that a lighthouse would induce vessels to run for the island, which now keep clear of it altogether, and would thus lure them amid shoals and sandbars that would be otherwise avoided, it was, in his opinion, strongly advisable that a lighthouse should be erected on some suitable site, near the central station on the island, for the following amongst other reasons: vessels not bound to Sable Island, or not driven there by currents or stress of weather, would no more run for it than they do now. They would, in fact, keep clear of it. Again, it affords no safe harbour of refuge. Vessels outward-bound would not require a new point of departure, and homeward-bound vessels have the mainland all before them. Vessels driven near the island would find a light invaluable. If the weather was thick, and they could not see it, they would not be worse off than they are now. If seen, it would at once indicate their true position, and if made to revolve from east to west, would show in what direction the bars lie, and by which course a station could be approached for assistance, when required. To vessels employed on Government service a light would be of great use. Schooners fishing round the island have at various times been compelled to run to sea to escape a severe gale which set in, and a revolving light would have helped them to make it again with little difficulty, and would have also shown them where to make it.

In corroboration of the views of the Hon. Mr. Howe, Captain Orlebar, commander of the Gulf survey, states that he thinks the opinions that had been expressed previously adverse to it, were founded on an imperfect acquaintance with the localities, and he goes on to say, "I have adverted to a light on the east point, because first in importance —as affording a sure and necessary guide to vessels crossing the Atlantic from the eastward, and being their first landfall; but a light on the west end should follow. . . . I am sure that there is no situation for a light of superior importance, conjointly to the large maritime interests of Great Britain, the United States, and your Province of Nova Scotia."

If it is admitted that powerful lights are necessary on the island, and all the evidence appears to be in favour of having them, it becomes apparent that in thick and foggy weather, which is very frequent in that locality, steam fog-whistles are also a necessity as adjuncts to the lights. Canada having been the first country in the world to adopt the use of these signals on her shores, in connection with lighthouses, it would scarcely be advisable to erect the one without the other, in so dangerous a spot, the fog-whistles being, in thick weather, equally as important and indispensable as the lights.

When the Confederation of the different provinces, which now form the Dominion of Canada, took place in 1867, a department was formed, specially charged with the control and management of all matters of a maritime nature, including lighthouses, beacons, fog-signals, inspection of steamboats, examination of masters and mates, and other subjects of a kindred nature. The administration of the department alluded to, known as the Marine and Fisheries, was entrusted to the management of the Hon. Peter Mitchell, formerly President of the Council of New Brunswick—a gentleman well versed in all maritime matters, and who has ably proved himself equal to the position assigned him. After mature consideration, he came to the conclusion that it was very important that lights and fog-signals should be placed on Sable Island. Parliament was accordingly asked for the necessary funds for carrying out the proposed buildings, &c., and voted the money without any opposition. After I had visited the island, I had no hesitation whatever in recommending to the Minister of Marine that a powerful light and steam fog-whistle should be placed on each end of it, which would allow a distance of twenty or twenty-two miles between them, thus rendering it almost impossible for a vessel to approach the island, in any kind of weather, without being made aware of its position. Should the night be clear and dark, one or other of the lights must be visible; if a thick stormy night, or during fog and storm, one or other of the steam fog-whistles will be heard, and each of these will have

distinguishing blasts to enable a mariner to define his position by the different sounds given out.

Two lighthouses are now being erected, one at either end of the island, and care has been taken to erect them in such a way as to afford sufficient room for the temporary accommodation of any crews of vessels which may happen to be shipwrecked in their vicinity, until they can be sent to the main station to be provided for in the houses of refuge there. Each of these towers, therefore, will answer the purpose of a lighthouse, a house of refuge, a flagstaff, a look-out, giving a view over nearly the whole island, and a day beacon which will be seen by vessels a considerable distance off, long before the island itself is visible. They will be maintained at a comparatively moderate expense, as the services of the superintendent and staff will be utilized in keeping the lights in operation, and thereby avoid the necessity of maintaining additional lighthouse-keepers. The estimated cost of the two lighthouses and two steam fog-whistles is 80,000 dols., and the estimated annual expense of maintaining the same is about 20,000 dols. An experienced engineer will be in charge of the steam fog-whistle at each end of the island. The plan of each of the towers is an irregular octagon. The one at the west end is on low sandy soil, the foundation of which will be about ten feet above high water mark. The height of the light above the ground is ninety-two feet, making the height of the light about 102 feet in all. This light will be a revolving one, on the catoptric principle, having three faces, following each other in immediate succession, and then an interval of total darkness. In these three faces there are fourteen large circular burner lamps, each possessing a deep heavily silvered reflector about twenty-four inches in diameter. The lantern, which is twelve feet across the base, together with the revolving machinery, lamps, and reflectors, were all made by Chanteloup, of Montreal, a native of France, who has manufactured the greater part of the catoptric lighting apparatus in use in the Dominion. The light will be seen for upwards of twenty miles. The lighthouse at the east end is built on high ground, about fifty feet above high water, and, consequently, will not be so lofty as the one on the opposite end. The light exhibited from it will be about 120 feet above high water mark, and will be a powerful white dioptric, which it is expected will be visible on a clear night at a distance of from twenty to twenty-five miles. The lamp to be used will be of great power, will burn petroleum oil, with four concentric wicks, and clock-work will pump up the oil to the wicks. Official notice will he duly given of both these lights, as well as of the steam fog-whistles, as soon as they are completed, and put in good efficient working order. The light at the east end, as well as the steam fog-whistle adjoining it, are now completed, and are probably in operation by this time, but no reliable information has yet reached me

to that effect; the communication with the island being so difficult and uncertain.

A circle is to be formed around each lighthouse of sheet piling, about three feet above the general surface of the ground, the interior of which is to be filled up with sand, and the whole area, inside the piles, not covered by the piers, is to be covered with a layer of concrete about three inches thick, to prevent the sand being carried away by the wind from the foundations. Outside the piles a regular slope is to be formed and fenced in, on which a willow hedge is to be planted, to effectually prevent the slope from being injured by the fearful gales which sometimes occur there. The steam fog-whistles will be erected, one at each end, in close proximity to the lighthouses, and will be heard in stormy weather, or against the wind, from four to ten miles, and in calm weather, or with the wind from ten to twenty miles, according to the state of the atmosphere.

The history of Sable Island would afford material for a hundred romances and Christmas stories, whose recital would make the blood run cold. It was, doubtless, well known to the French when they colonised Acadie, for it was made a penal colony in 1598, when forty French convicts were landed there by the Marquis de la Roche, and left to their fate. Seven years afterwards a vessel was sent out by royal command to take them back to France, but only twelve survived to tell the tale of their sufferings. Traces of their abodes remain, and the "French gardens" are still pointed out to the visitor. Up to the beginning of the nineteenth century, the island was much resorted to by fishermen, and as wrecks multiplied with the increase of commerce, it became the abode of wreckers, pirates, and other persons of doubtful character. Few of those who survived shipwreck to reach its shores, ever lived to bear their story to the mainland; but jewels and articles of rare value were sometimes exhibited confidentially as having come from there. By-and-bye horrid tales of blood began to be whispered abroad, and Sable Island became an ill-omened name. Secure from the reach of law, and protected by the very dangers which multiplied his victims, the wrecker here plied his murderous calling.

Allusion was made in a previous paragraph to the wild ponies of Sable Island. How they first came there is unknown, but it is more than probable that their origin, if it could be traced, might be attributed to the wreck of some Spanish vessel in days of yore, from which some of the animals in question escaped, and, being unmolested, soon multiplied. Dr. J. Bernard Gilpin, of Halifax, in a carefully prepared paper, describes the breed very fully, and says they are from twelve to thirteen hands high; mane and tail reaching nearly to the ground; the coat long and shaggy during winter. They persistently refuse the shelter of a stable

in all kinds of weather, and always avoid the society of man. Batches of them are caught from time to time and conveyed by a Government vessel to Halifax, where they are sold on Government account. During the winter of 1870, numbers of these animals died from the unusual severity of the season. Their sufferings were reported by the superintendent as very great from cold, hunger, and thirst. Ponds were occasionally opened for them to drink out of, and the fodder of the island given to any of them that would come for it; but they died in greater numbers than had ever been known before, and many of their skeletons now lie bleaching on the white sand, where death kindly came to their relief and put an end to their sufferings. There were formerly about 400 of them on the island, but it is supposed that in 1870 about one-half of them died through hunger, thirst, and the severity of the weather. They realise from fourteen dollars to twenty-five dollars a-piece at public auction. These animals display great intelligence in their domestic habits, and although living in this wild state seem possessed of all the sagacity and instinct for which the tame horse is celebrated. They are divided off in gangs with a large powerful stallion as leader of each herd, which generally numbers from fifteen to twenty-five. In the course of my tour round the island on horseback with the superintendent, I passed close to some of these gangs. As I approached them, the leader would leave his family and advance to meet me, and remain in a defiant attitude till I had passed on, evidently prepared to show fight if any interference with the family under his charge had taken place. The gang consists of mares, colts, and young horses, and when the latter attain their full growth, the leader generally turns them out. These then wander about the island for a short time until they manage to steal a few mares away from some of the others, and form new gangs for themselves. On these occasions severe fighting ensues between the leader and the intruder, the contest not unfrequently lasting for hours, and even days, each biting and tearing the other, until one or other is overpowered. If the intruder beats the leader of the gang, he takes his place, and appropriates to himself the mares or as many of them as he wants. It sometimes happens when a young stud horse wants to form a gang, he proceeds surreptitiously at night, and inveigles away a mare which he takes off to some other part of the island, for each gang selects and keeps its own district or feeding ground. When a stallion finds one of his mares missing, he searches the island for her, and when found contests for her possession with the horse that has decoyed her away, and, if victorious, marches her off with him back to his gang; if defeated, the conqueror, in all probability, will despoil him of other females and thus break up his gang. Might, not right, is the law which governs these animals. The mares accept the situation when the

fighting is over, and give in their allegiance to the conqueror without further trouble, and live quietly and peaceably with their leader until some new domestic difficulty ensues, which has again to be solved in a similar manner.

Owing to the difficulty of procuring their food in the winter, which they do by scraping the snow from the ground with their feet, and eating the dried pea straw and coarse grass which they find, these wild ponies become, towards spring, mere skeletons; but by the months of July and August they regain their condition and become fat, and are fit to bear shipment to the mainland. Before that period they are too weak for shipment. When properly fed and trained for work, they turn out an excellent hardy breed of horses, somewhat similar to the French Canadian horse or pony, although sometimes very difficult to break in if advanced in years. With the exception of such as may be required by the island staff, not exceeding from thirty to forty, the Government purposes bringing these animals off the island, and in place of them raising a larger supply of cattle than has hitherto been maintained there, so that sufficient animal food may be always at hand, without the necessity of sending to the island large supplies of salt beef and pork with which to feed the staff and any shipwrecked crews who may happen to be landed there. At the present time there are upwards of fifty head of cattle maintained on the island.

Mr. Howe, in his report, made allusion to the cranberries "of large size and fine flavour" which grow in abundance on Sable Island. Large quantities of these are picked in the autumn, and from the years 1863 to 1869 inclusive, a yearly average of 620 dols. was realized by their sale. In 1870 the crop was unusually good, but the Government steamer on her last trip of the season to the island, was unable to bring them off, in consequence of the heavy sea running. As no vessel touched there again till the spring, they were damaged to a large extent, and the greater part of them were so injured by the winter's frost as to be unfit for shipment. The crop of this fruit, now growing spontaneously, might be possibly increased; an acre of ground being calculated to yield eighty-five bushels of berries.

If a large supply of trees could be cultivated on the island, they would materially assist in keeping it from being washed away by the encroachment of the sea, and would tend to prevent the sand being blown about from place to place, as is the case at present. There would also be a landmark which could be distinguished by vessels a long way off. The Government have sent a supply of shrubs, willows, and other kinds suitable for that sandy soil, and it remains to be seen whether the experiment will succeed.

In conclusion, I may add that it is to be hoped that before long a tele

in all kinds of weather, and always avoid the society of man. Batches of them are caught from time to time and conveyed by a Government vessel to Halifax, where they are sold on Government account. During the winter of 1870, numbers of these animals died from the unusual severity of the season. Their sufferings were reported by the superintendent as very great from cold, hunger, and thirst. Ponds were occasionally opened for them to drink out of, and the fodder of the island given to any of them that would come for it; but they died in greater numbers than had ever been known before, and many of their skeletons now lie bleaching on the white sand, where death kindly came to their relief and put an end to their sufferings. There were formerly about 400 of them on the island, but it is supposed that in 1870 about one-half of them died through hunger, thirst, and the severity of the weather. They realise from fourteen dollars to twenty-five dollars a-piece at public auction. These animals display great intelligence in their domestic habits, and although living in this wild state seem possessed of all the sagacity and instinct for which the tame horse is celebrated. They are divided off in gangs with a large powerful stallion as leader of each herd, which generally numbers from fifteen to twenty-five. In the course of my tour round the island on horseback with the superintendent, I passed close to some of these gangs. As I approached them, the leader would leave his family and advance to meet me, and remain in a defiant attitude till I had passed on, evidently prepared to show fight if any interference with the family under his charge had taken place. The gang consists of mares, colts, and young horses, and when the latter attain their full growth, the leader generally turns them out. These then wander about the island for a short time until they manage to steal a few mares away from some of the others, and form new gangs for themselves. On these occasions severe fighting ensues between the leader and the intruder, the contest not unfrequently lasting for hours, and even days, each biting and tearing the other, until one or other is overpowered. If the intruder beats the leader of the gang, he takes his place, and appropriates to himself the mares or as many of them as he wants. It sometimes happens when a young stud horse wants to form a gang, he proceeds surreptitiously at night, and inveigles away a mare which he takes off to some other part of the island, for each gang selects and keeps its own district or feeding ground. When a stallion finds one of his mares missing, he searches the island for her, and when found contests for her possession with the horse that has decoyed her away, and, if victorious, marches her off with him back to his gang; if defeated, the conqueror, in all probability, will despoil him of other females and thus break up his gang. Might, not right, is the law which governs these animals. The mares accept the situation when the

fighting is over, and give in their allegiance to the conqueror without further trouble, and live quietly and peaceably with their leader until some new domestic difficulty ensues, which has again to be solved in a similar manner.

Owing to the difficulty of procuring their food in the winter, which they do by scraping the snow from the ground with their feet, and eating the dried pea straw and coarse grass which they find, these wild ponies become, towards spring, mere skeletons; but by the months of July and August they regain their condition and become fat, and are fit to bear shipment to the mainland. Before that period they are too weak for shipment. When properly fed and trained for work, they turn out an excellent hardy breed of horses, somewhat similar to the French Canadian horse or pony, although sometimes very difficult to break in if advanced in years. With the exception of such as may be required by the island staff, not exceeding from thirty to forty, the Government purposes bringing these animals off the island, and in place of them raising a larger supply of cattle than has hitherto been maintained there, so that sufficient animal food may be always at hand, without the necessity of sending to the island large supplies of salt beef and pork with which to feed the staff and any shipwrecked crews who may happen to be landed there. At the present time there are upwards of fifty head of cattle maintained on the island.

Mr. Howe, in his report, made allusion to the cranberries "of large size and fine flavour" which grow in abundance on Sable Island. Large quantities of these are picked in the autumn, and from the years 1863 to 1869 inclusive, a yearly average of 620 dols. was realized by their sale. In 1870 the crop was unusually good, but the Government steamer on her last trip of the season to the island, was unable to bring them off, in consequence of the heavy sea running. As no vessel touched there again till the spring, they were damaged to a large extent, and the greater part of them were so injured by the winter's frost as to be unfit for shipment. The crop of this fruit, now growing spontaneously, might be possibly increased; an acre of ground being calculated to yield eighty-five bushels of berries.

If a large supply of trees could be cultivated on the island, they would materially assist in keeping it from being washed away by the encroachment of the sea, and would tend to prevent the sand being blown about from place to place, as is the case at present. There would also be a landmark which could be distinguished by vessels a long way off. The Government have sent a supply of shrubs, willows, and other kinds suitable for that sandy soil, and it remains to be seen whether the experiment will succeed.

In conclusion, I may add that it is to be hoped that before long a tele

graphic wire may connect Sable Island with the mainland, a consummation which would be of the utmost importance, as in the event of a wreck taking place there, assistance could at once be procured from the mainland. The idea of such a means of communication has often been mooted. Mr. Brown, the late chairman of the Board of Works of Nova Scotia, states in his report of 1866, that had such a cable been in operation then, the additional amount of property saved that year by means of the timely notice of wrecks, obtained through such agency, would have gone far towards defraying its cost. If communication by this means were once established, the island would only require to be visited, except in case of wreck, once or twice a year, and then only for the purpose of carrying supplies.

Before closing this article it is a pleasing thought to know that little familiar as this solitary isle is to the generality of English readers, the charts merely showing the existence of such a place, the refuge and help offered and provided for the wrecks of all nations, is of British hands and means, and that till the Dominion of Canada at the Confederation of the Provinces in 1867, undertook the control of the maritime matters of the principal portion of the British North American Possessions, Nova Scotia, though not a large colony, stood prominently forward in fostering and supporting this noble and isolated Humane Establishment on Sable Island, aided by the British Government.

Since Confederation, the Canadian Government has nobly done its duty in improving the approaches to the coasts of the Dominion, and in the short space of five years and a half has added at an enormous cost nearly one hundred new lighthouses and steam fog-alarms to those previously in existence, for which no tax is levied on shipping. Not the least important of these will be the great sea-lights and steam fog-whistles on Sable Island, for the benefit not only of Canadian shipping, but for that of all the world, which passes and repasses between Europe and America. For these improvements on this desolate island, as well as for those on the shores of the mainland, the maritime interests of the Dominion, aye, and even of the world at large, have been much indebted to the Minister of Marine of Canada, the Hon. Peter Mitchell, whose unceasing efforts and untiring energy have mainly contributed to bring about these improvements and additions to our navigation securities, and long after he has ceased to superintend and watch over the maritime interests of Canada, his name will be remembered as the First Minister of Marine of the Dominion, who was the means of placing lights and steam fog-alarms on that most dangerous of places, Sable Island, for the benefit of the shipping of all nations, and in the interests of the maritime population of the world at large.

Ottawa, 6th December, 1872.

OUR GREAT PORTS.

LIVERPOOL.

LONDON is the chief port for "imports," and Liverpool may claim to be the first for "exports." Unlike her more antique sister, she has not attained this eminence by the shadow of royalty being always present around her; or by the development of well nigh 2,000 years of commercial progression. When the former was a flourishing port, the latter was but a fishing village, and famous only for the quantities of "laver," thrown on the banks of the Mersey. Under her present cognomen she is not even mentioned in "Doomsday Book." By some it is supposed she is therein called "Smedune," or "Esmedune." This idea is enforced by Picton in his "Ancient Liverpool." In other old records the town is called Litherpul, Lyrpul, and Liferpool. Various reasons have been given for the derivation of the name; as, for instance, the word "Lithe," meaning the sea; the frequenting of a pool by an aquatic fowl called the "Liver;" the quantities of "laver," or "liver"—a seaweed—found there; and also, in the ancient dialect, the name signifying the lower pool.

William the Conqueror gave a grant of that part of the county, situated between the Mersey and the Ribble, to Roger of Poitiers, who built a castle there in 1089. This is supposed to have been the origin of the town. Until 1172 it remained but a small fishing place. It then attracted the notice of Henry II. as a convenient place of rendezvous for troops, intended for the conquest of Ireland. He granted a charter to it during the next year. In the year 1207 King John granted it a second charter, in which it is called Lyrpul. Under this deed houses were built there, termed "Burgage houses," the tenants of which were "freemen," and were entitled to certain privileges; or, as the charter expresses it, having "the liberties, or free customs" of the port. The succeeding—Henry III.—in 1229 declared the place a "free burgh," and farmed out the dues, which amounted to the extensive sum of £10 per annum. We find that John of Gaunt did the same thing in 1899, for the sum of fifty-seven marks. But in 1466 the amount had only increased to £14. In the year 1335 Liverpool was made an independent port, and Henry, Duke of Lancaster, made it his place of abode in 1858. No important matter connected with the trade appears to have transpired till the beginning of the 16th century, when Leland mentions it. He says, that "Irisch merchantes cum thither as to a good haven. At Lyrpole is smaule custums payed that causeth the merchantes to resorte. Good merchantes at Lyrpole and much Yris yarn that Manchester do buy there." It appears, however, by a petition presented to Elizabeth in

1571, that trade had declined again, for it is called therein, "Her Majesty's poor decayed town of Liverpoole;" and a town record of that period states the number of householders to be only 138. When the famous impost of "ship-money" was levied in 1630 by Charles I., only £26 was allocated to Liverpool, whereas £1,000 was the amount imposed on Bristol, showing that these since rival ports stood then as one to forty, so far as regarded the extent of their shipping.

It is remarkable that, from the period of the "Restoration," the place seems to have made steady and rapid progress. Macaulay records that in the time of Charles II., "It was a rising port, enjoying a profitable trade with Ireland and the sugar colonies. The Customs amounted then to £15,000, and their increase had been eight-fold in sixteen years."

It is a fact that no records have been preserved of the methods adopted in early times for the protection of the craft then frequenting the port. The original harbour was a small creek or sea lake, fed by a feeble stream, and exposed to the winds and currents of a stormy estuary, in which the tides, at full and change, rise upwards of thirty feet. In the year 1561, however, a new harbour had its foundations laid by the then Mayor, and the work was performed at the expense of the citizens, every house sending a labourer gratis. The structure was probably nothing more than a breakwater—to restrain the violence of the waves. Further slight improvements were made from time to time, but it was not till the beginning of the eighteenth century that any important step was taken to provide dock accommodation. There is no doubt that the honour of commencing a commercial revolution in this respect belongs to this town. The original dock has long been filled up, and it is now occupied by the site of the Custom House. So early as 1752, a care for the seafaring population was manifested by the founding of the Seamen's Hospital, which has done good service to the Mercantile Marine. But this generosity for the home population does not seem to have been shared in by all the Liverpool men for the unhappy foreigners of Africa, for in that same year it is narrated that no less than 101 merchants were engaged in the horrid traffic of slaves. This obnoxious business seems to have ceased during the French war; and a stimulus seems then to have been given to maritime operations in another direction—namely, privateering. In the year 1778, Liverpool fitted out no less than 120 privateers, carrying 1,986 guns and 8,754 seamen. But the maxim that "Those that live by the sword shall perish by the sword," seems to have been held good there, for we find that the town and its interests suffered severely by the retaliatory measures of the enemy's vessels bearing letters of marque. Commercial distress was also created by the breaking out of the American War of Independence, as, by that time, a considerable trade had sprung up with the colonies of the west. This

trade, in due time, was restored as the United States settled down in peace, and the banners of commerce were again floated aloft. In the year 1780, it is recorded that Liverpool had thirty sailing ships constantly employed in the continental trade alone. This was a considerable business in that line at that period. In those days, some domestic calamities occurred which are worth noting. In 1789, a fearful storm raged, which caused immense loss. In 1795, both the Exchange and Town Hall buildings were destroyed by fire. Both have since been restored. On September 14th, 1802, a dreadful fire broke out, which caused damage to the amount of a million pounds sterling. In 1833, another similar calamity took place, the damage being estimated at £300,000; and, in 1842, again the amount of loss was said to be half a million, from the same cause. In continuation of efforts made to ameliorate the condition of the seafaring denizens, the American Seamen's Hospital was erected in 1820; and, in 1823, the "Marine Humane Society" was formed. One of the principal objects of interest, especially to nautical men in this city, is the trophied monument erected to the memory of Admiral Nelson, in 1823, which, amid profuse ornamentation, bears the immortal inscription, "England expects every man to do his duty."

But it may be remarked that the annals of the place are simply the record of its commerce. To foster this, three great mechanical means have been employed there—namely, canals, railways, and docks. The extended system of canals actually gives a communication through the heart of the Kingdom to the North Sea. The first constructed was in 1758, and is well known by the name of the Duke of Bridgwater's Navigation Canal. The next was formed in 1770, to communicate with Leeds; another to Wigan in 1774; another in 1776 to Manchester; others again to Leeds and Birmingham, in 1816 and 1826. It may be said that the railway system, as well as that of the docks, had its birth-place at this remarkable trading centre. The first great undertaking of the kind, upon which steam engines were used as the motive power, was the "Liverpool and Manchester" line, begun October, 1826, and opened 10th September, 1830—a day made memorable in political annals by the death of Mr. Huskisson, who assisted at the opening ceremony, and who, in alighting from one of the engines was knocked down and run over, thereby causing the loss of a man lamented by the whole nation. The Duke of Wellington and many other illustrious persons were present on that occasion. It is, however, in the docks that Liverpool is to be exhibited to most advantage. As already stated, the first dock created there, was disused, and the site built upon. This was done in 1828.

Down to the end of the 17th century the only idea of extension in

harbour space was that of enlarging the pool inwards by an artificial cut along the line of Paradise Street; but in 1708 the then parliamentary representatives were empowered to treat with Mr. Thomas Steers, of London, to whom the honour of the first notion of forming a wet dock is due. He recommended the conversion of the pool into a floating dock by impounding the water with flood-gates. This was promptly acted on, and, in 1709, application was made for parliamentary sanction to carry out the works. The scheme was opposed by the *cheesemongers of London*, who had a line of vessels which loaded at the Sloyne, and who strenuously contended against paying dock dues for accommodation not required by them. The Bill was obtained notwithstanding, and the dock was opened two or three years afterwards. The following table shows when the docks were opened; and it may be here remarked that to the energy and skill of Mr. Jesse Hartley, who was appointed in 1824, much of the grandeur, convenience, strength, and solidity of the later works are due :—

Year opened.	Name.	Width at Entrance.		Water area.		Lineal Quayage.	
		ft.	in.	ac.	yds.	Miles.	Yds.
1721	Old Dock ...	...	...	8½	0	...	...
1753	Salthouse ...	45	0	6	2019	0	784
1771	George's ...	41	11	5	154	0	645
1788	King's ...	42	0	7	3896	0	875
1796	Queen's, W. ...	50	0	10	1364	0	1214
1811	Prince's, N. ...	45	0	11	1490	0	1178
1816	Union, &c. ...	...	...	...	...	...	...
1830	Clarence ...	47	0	6	273	0	914
1832	Brunswick, N. ...	60	0	12	3010	0	1086
1834	Waterloo, S. ...	60	0	8	2146	0	588
1836	Victoria, N., &c. ...	45	0	5	3559	0	755
1845	Albert, N. ...	45	0	7	3542	0	885
1848	Stanley, W., &c. ...	51	0	7	120	0	753
1849	Wellington, W., &c.	70	0	7	4120	0	820
1838	Wapping, W. ...	50	0	5	499	0	815
1851	Sandon, W. ...	70	0	10	100	0	867
1852	Huskisson ...	...	...	14	3457	0	1039
1859	Canada, S.E. ...	50	0	17	4043	0	1272
1864	Herculaneum, N. ...	80	0	3	3000	0	416

The above are the principal docks, on the Liverpool side of the Mersey, exclusive of their branches, locks, basins, passages, &c.

There are, however, some forty docks altogether on both sides, measuring 421 acres, with quay walls extending for a lineal surface of twenty-eight miles. They may be summarised thus :—

	Acres.	Miles.
On Liverpool side, Docks	286½ ...	16¼
,, ,, Basins	19½ ...	1½
On Birkenhead side, Docks	146½ ...	8¼
,, ,, Basins	18½ ...	1½
Total	421 ...	28

This statement does not include graving docks, of which there are about 12,000 feet at Birkenhead, and 10,000 feet on the north side of the Mersey. There are also two "gridirons" at Liverpool, measuring 822 feet. Besides the docks mentioned, there are docks at Garston, situated up the river a few miles, measuring six acres, and one or two others measuring about eight acres.

Moreover, all this accommodation is found inadequate to meet the extraordinary growth of the port, and the vast increase in the size of the steamers, now being added to the various "lines" trading from thence. Accordingly we find that a committee has been appointed by the Mersey Docks and Harbour Board to consider and report as to the means available by the trust estate; and the additions to the dock room now required. The report made by the engineer proposes a steam dock extension, of forty-two and three-quarter acres, and various alterations in existing docks. These expenses, together with others, such as the purchase of property, &c., are estimated to amount to £4,834,051. These are certainly bold figures to start with; and, when it is considered that it took eleven years to obtain capital and construct the first, or "old dock," which was only three and a-half acres in extent, and cost something under £20,000, the contrast is sufficiently striking.

The total area of the Mersey Dock estate is 712 acres: and that on the Birkenhead side 445, or thereabouts. It may be mentioned, *en passant*, that in 1870, no less than 875 houses, shops, &c., were vacant at the latter place, owing to depression in trade, and the want of tunnel or railway communication with Liverpool. Since then the Pacific steamers have been sent there, and things appear to be wearing now a different aspect.

An important work is now progressing—viz., a tunnel under the Mersey. When this is completed, and the two landing-stages on the Liverpool side are joined and converted into one long stage, and when an incline is made by which horses and carts can, at all states of the tide and with safety, drive on and off the stage, it is probable that Birkenhead, by being brought into practicable communication with Liverpool, will be recognized as of first-rate importance to the shipping interests of the port.

To summarise the trade of Liverpool would be to epitomise the branches of business formed over the whole commercial world.

The coasting trade with Ireland has long formed a staple part of the commerce of the port. Cotton has long been extensively imported into Liverpool. It was first imported in the year 1500 into England, according to some accounts. Certain it is an Act of Parliament was passed relating to it in 1565. Little, however, appears to have been imported for nearly 200 years. In 1781 the total imports of cotton wool were 500,000 lbs.; but the largest quantity yet landed was in 1860, when it reached 1,390,938,752 lbs., the greater part of which was received in the Mersey. In the year 1800, it is said, one bag alone formed the whole stock at Liverpool. How different from the present time, when about 2,000 mills are at work in Lancashire, some of which employ as many as 2,000 hands! The establishment of mills at Liverpool has not succeeded, as it is rather a place of trade than that of manufacture. The next great feature in the commerce there is the steam connection with America, which has now reached such gigantic proportions, since its commencement, in 1838, by means of the *Liverpool*—a steamer 460 horse-power. It is needless to mention the extent of the present "lines" from that port, as we shall soon give an exact list of them. Suffice it to say that out of the 130 or more British steamers, trading to the United States, more than half sail from the Mersey—one line alone has 24 steamers, measuring 65,000 tons, and in a year can carry 50,000 passengers, and half a million tons of merchandise. The trade with Australia, until recently, has almost been monopolised by this port. The clipper ships of the "Black Ball," and other lines, having now become famous in the annals of commerce. The trade with the West Indies is also very large; and, indeed, with the East Indies, and other quarters of the world is singularly extensive. A very large grain trade is carried on. Coals are largely shipped; as, also, are salt, cutlery, earthenware, woollen and cotton goods, &c. The imports almost in extent exhaust the products of the known world. The manufacturers of the city are chiefly connected with shipping, or the home use of the people. Shipbuilding is extensively prosecuted; there are also extensive iron and brass foundries, soap works, breweries, &c. The watch making and tool businesses are much developed, and have given a character to the place. The sale of ships there, is said to have reached as much as 328,991 tons in one year. A large "transit" trade is also carried on to supply the ports of the Continent; and the amount of emigration is unapproachable by any part of the world.

A few statistics will best illustrate the progress of the places, if stated concisely.

The population returns show the following results :—

In 1665	there	were	...	...	1,000 persons.
,, 1700	,,	,,	...	...	5,714 ,,
,, 1801	,,	,,	...	...	77,708 ,,
,, 1851	,,	,,	...	...	376,068 ,,
,, 1871	,,	,,	...	...	493,346 ,,

The number and tonnage of vessels which entered inwards, in all trades, were :—

In 1800	...	2,261	vessels	...	45,000 tons.
,, 1830	...	11,214	,,	...	1,411,964 ,,
,, 1871	...	13,086	,,	...	5,751,352 ,,

The number and tonnage of vessels on which dock dues were paid, were :—

In 1723	...	131	ships	...	8,700 tons.
,, 1751	...	220	,,	...	19,176 ,,
,, 1801	...	5,060	,,	...	559,719 ,,
,, 1811	...	5,616	,,	...	611,190 ,,
,, 1815	...	6,440	,,	...	709,849 ,,
,, 1825	...	10,837	,,	...	1,223,820 ,,
,, 1831	...	12,537	,,	...	1,592,436 ,,
,, 1841	...	16,108	,,	...	2,425,461 ,,
,, 1851	...	21,473	,,	...	3,912,506 ,,
,, 1861	..	21,095	,,	...	4,977,272 ,,
,, 1871	...	20,121	,,	...	6,131,745 ,,

These figures show that, latterly, the numbers of ships have decreased, but the tonnage has increased in a much larger ratio, owing to the larger class of ships employed.

The number and tonnage of vessels which entered and cleared at Liverpool in all trades, were :—

In 1837	...	21,726	vessels	...	3,292,022 tons.
,, 1861	...	29,897	,,	...	8,967,746 ,,
,, 1871	...	26,828	,,	...	11,321,145 ,,

The number of emigrants who left were :—

		1861.		1870.
From Liverpool	... ...	—	...	163,169
,, United Kingdom	...	91,770	...	256,940

Evidently, considerably more than half of this class of persons who leave our shores sail from this progressive port.

The Customs duties show an enormous increase, and in considering these we must remember the taxes which have been remitted during the periods referred to. They amounted—

In 1783 to	£92,466
,, 1800 ,, ...	£1,058,578
,, 1870 ,, ...	£2,723,390

The shipping registered there, according to Macaulay, in the time of Charles II., amounted to 1,400 tons, manned by some 200 seamen. The returns show that this feature of prosperity had reached—

In 1829 to	805	vessels of	161,780 tons.
,, 1846 to	1,466	,,	387,535 ,,
,, 1861 to	2,596	,,	1,098,078 ,,
,, 1870 to	2,611	,,	1,437,373 ,,

The Municipal Debt amounted—

In 1841 to	£1,212,192
,, 1871 ,, ...	£4,363,070

The amount of rates levied were—

In 1841	£81,773
,, 1851	£136,786
,, 1861	£194,296
,, 1871	£300,941

This enormous difference is accounted for in part by the growth of the town, and partly by the creation of new rates such as for water, sewers, park and street improvements, and public offices. But it is alleged that although labourers' wages have only increased twenty-three per cent. in thirty years, the incidence of rates has increased sixty-four per cent.

The paving, cleaning, lighting, and drainage are administered and controlled by a Health Committee, who have effected a great improvement in the sanitary state of the place. The water supply is under the management of a committee also. The total amount of rates collected at Liverpool, for all purposes, approaches a million sterling, The town dues on the Birkenhead side were formerly bought up by the Mersey Board for £1,500,000—they were yielding at the time £70,000 per annum. In 1770 the reversion of the town dues of the Liverpool side were bought from Lord Molyneux for £2,200; whereas, in 1856, the collection amounted to £120,000. The dock dues yielded £326,801 in that year, and one hundred years previously they were only £2,336. The net surplus alone, in 1871, was £140,000, and the total town income was £960,516.

At the beginning of this century most of the merchants had their business offices and dwellings in one house; now they have princely mansions scattered around the suburbs, forming substantial evidences of the improved status of the port.

It is a curious fact that London, after 2,000 years' experience, absorbs about half the import trade of the nation, whereas, Liverpool, with one-tenth of this trading life, does about a moiety of the export business. The causes which have favoured her are not remote. The first is the natural advantage she enjoyed of being situated in a fine river, in such a part of the coast, as to bid for the Irish and American commerce. The next is the accident of being placed only thirty-six miles from Manchester, where cotton has made its favourite resort. But, in addition to these, credit must be given to the men of the Mersey for their energy and foresight. One writer remarks of the place that, "Its history, subsequent to the Restoration, is the detail of its increasing commercial prosperity, one principle of which seems to be hinted at by Leland in the 'smaule custume payed.' Its great increase and prosperity have been occasioned by the enterprise and skill of its inhabitants, by its local advantages, and by the enlarged wisdom of the corporation in abolishing all exclusive laws, and encouraging, by an entire freedom, every species of industry and commercial talent."

This encomium is certainly not too highly pitched. We shall next notice Newcastle and the Tyne ports.

CORRESPONDENCE.

THE HIPPOGRIFFE SHOAL.

To the Editor of the Nautical Magazine.

Dear Sir,—I have been informed that the coral reef, south of the Gasper Straits, known as the Hippogriffe Shoal, has been expunged from the British charts. I was chief officer of the ship *Hippogriffe*, at the time she struck the shoal, and after backing off, came to an anchor and surveyed it. We had a chronometer on board that ran on mean time, from the time we left London until we returned, and I am positive that the position assigned to it is correct. There is but six (6) feet of water over it at low tide.

Your obedient servant,

D. WILLES HOWES,

Inspector Individual Underwriters, 62, Wall Street, New York.

Dec. 19th, 1872.

RAMBLING NOTES BY AN OLD CONTRIBUTOR.—VENICE TO GALLE.

To the Editor of the Nautical Magazine.

Dear Sir,—Embarking at Venice, in a Peninsular and Oriental Company's steamer, the voyager gets an opportunity of observing how rapidly Italian commerce improves now that the kingdom is united. At Venice, as well as Ancona and Brindisi, the harbours are being dredged, and the moles and quay accommodation extended, while the coast is quite as well, if not better lighted than our own.

At Alexandria slow progress is being made with the extension of the mole, and it is only such a government that could permit the large and increasing trade of the port to be inconvenienced by the want of floating docks and warehouses. At Suez a vast improvement has been effected by the construction of the new harbour, the continuation of the railway alongside the steamers, and the completion of the spacious graving dock.

A travelling director, or inspector, for the Peninsular and Oriental Company would find it easy to fill a large note-book with suggestions for alterations and improvements, as well in the despatch of the steamers from the harbours where they call, as in the internal economy of the vessels. The passengers from Southampton, as well as Brindisi, arrived at Alexandria, simultaneously, at seven a.m., on Thursday; they were forwarded by railway same evening, about seven p.m.; arriving at Suez about seven on Friday morning. The personal baggage, which had been in the cabins, did not arrive at Suez, to be in possession of the passengers, until Saturday morning. Goods of all descriptions—*not accelerated traffic*—continued to arrive all Friday, day and night, and even on Saturday morning, the steam winch working all the time, preventing all sleep. Not one word of blame is here intended or insinuated against the indefatigable agent of the company at Suez, who was ever at his post; but, surely, better arrangements could be made with the railway company, and had passengers been informed at Alexandria, on Thursday morning, that the steamer would not sail before Saturday, a pleasant and enjoyable visit could have been paid to Cairo. Arriving at Alexandria on Thursday morning, at seven a.m., the Bombay passengers left Suez on Saturday, at ten a.m., and the Calcutta and Australian passengers at 4.15 p.m., on same day.

The Red Sea is not yet as well lighted as it should be, more especially since the increased traffic consequent on the opening of the Suez Canal. One light is much wanted on the "Brothers," another on Aboo Eyle, and a lightship off Mocha would render this dangerous sea comparatively safe. The materials for a lighthouse on the "Brothers" were sent to Alexandria a good-many years ago; they have been lying at Suez for the past three or four years, and a portion of them at this moment serves as

a "Templum Cloacinæ!" Surely, in the interests of our important commerce, our Government should urge the completion of the lighting of this much frequented ocean highway.

It is beyond dispute that our Mercantile Marine is in a transition state, steam everywhere superseding sails, and steamers, as they are now built and rigged, have very small masts, spars, and sails, and the whole heavy work of making and shortening sail is done by steam machinery.

It is no longer of the slightest use to an officer of a steamer to know how to clinch a cable or fit a truss, how to wear or clubhaul, to rig a bowsprit, or take in a mast. Therefore, we think the time has arrived when the seamanship examinations conducted under the auspices of the Board of Trade, should be altered to suit the circumstances in which we are now placed.

There are improvements in the mode of navigating vessels which are not generally embodied in the seamanship examination of candidates for the merchant service. One of the most useful of these is the four point bearing of an object to ascertain the distance from it in passing. Nothing is more important, nothing more simple. Many a ship has been embayed in Cardigan Bay in running up the Channel from Tuskar, because the course was given from light to light instead of from the point more or less distant from Tuskar, but a distance which never was ascertained, except by estimation.

Another improvement should be explained and insisted on in seamanship examinations, the use of Field's parallel ruler, which enables the course between two points to be at once ascertained in degrees without reference to the compass or the chart. The compasses made by J. U. Blakeney and Co., of Glasgow, Hull, and Sunderland, cannot be too highly recommended, although notwithstanding the strong recommendations of the commanders and officers of the Peninsular and Oriental Company who have tried them, they are not generally furnished to their steamers. These compasses are large, steady, and graduated to degrees, in which, and not in points, the course is given; we feel sure there is a considerable saving in distance and coals from their use.

One thing is very certain—the present state of matters on board steamers between the commander and the engineer cannot be continued without great detriment to the well conducting of the ship; the "imperium in imperio" must cease; there must be only one supreme authority on board; and in order that that authority may run no risk of being disputed, officers and commanders must study the principle and working of the steam engine, so as to be able to know when it can work, how much work it can do, or the reason why it cannot do the work required. On board the steamer where we are writing, there is discord between the two chiefs, a discord which militates much against the interests of the Com-

pany, who do not act wisely in keeping a man, however well up in his profession, who declines to obey the commands—or does so in his own manner—of the only authority that should be supreme afloat.

So far as our observation extends the Company's vessels are well navigated, the executive is strong and intelligent, and on board the steamer where we now write, the commander pays particular attention to scientific navigation, yet we confess to a feeling of disappointment yesterday when, through squally cloudy weather, no forenoon sights were obtained for the chronometer, no longitude was obtained by equal altitudes, more especially as from the nature of the weather, afternoon sights were not likely to be got.

Two hours more daylight would have secured our entrance into Galle Harbour, which with a better understanding between the executive and engineer departments could surely have been managed. We lay off and on all night, at some distance from the land, while the Peninsular and Oriental Company's steamer from Bombay dropped her anchor in shore, and entered the harbour some time before us. The light at Galle is entirely unsuited to its position, as one of the most important turning points in the eastern seas. It is called a "twelve mile" light, but in the south-west monsoon, or in squally, showery weather, it cannot be run for with safety. The light, wherever placed, could be of no use for entering the harbour at night, therefore a new lighthouse should be built on the high ground to the eastward of the port, and a light of the first quality placed in it.

How a light of this nature, situated on a very important turning point, serving to direct vessels to and from many ports beyond Ceylon, is to be built and maintained, is a question worth sound consideration. The Cingalese Government may very naturally object to incur a large expenditure for the benefit of vessels not coming to their harbours, but as the general commerce of our country in particular is benefitted by such a light, some arrangement might be made by which the Trinity House should contribute something towards the cost, and some international contributions for lights such as this, could, perhaps, be negotiated.

Leaving Galle, we expected that in the end of November the north-east monsoon should have set in steady; the weather is, however, dark and lowering, heavy squalls, followed by strong breezes, from E. to S.E. and S., force from 0 to 6 and 7, with the heaviest rain that even the tropics can produce, and the barometer, indicating considerable disturbance, ranging from 29·70 to 29·88. The sea also is at times very much disturbed; now a long rolling swell from the south-east, then a rugged, broken, tumbling knoll of cross sea, apparently from no particular point.

There were no observations obtainable, and caution was exercised so as to delay our reaching Madras twenty-four hours. We anchored in Madras roads on Thursday, at 5 p.m., and left again on Sunday at 1.15

p.m., having discharged some 1,500 packages of goods. While we were in the anchorage we shifted our position three times, for no satisfactory reason that could be observed. Two steamers of the Peninsular and Oriental Steam Navigation Company and one of the Messageries boats came in while we were here, and anchored close in shore, facilitating their cargo operations very much, nor can there be any danger in a steamer anchoring in shore, as with her fires banked up, full steam can be got up in half an hour.

The Peninsular and Oriental Company must look to their laurels. In the palmy days of large subsidies and a complete monopoly, their ships were a sort of cross, between men-of-war and yachts. The Suez Canal has entirely altered their position, and they must manage their ships in conformity with their altered circumstances. They have some very fine vessels just built, capable of carrying large cargoes, and, with the compound engines, of doing their steaming on a very small expenditure of coals, but there must be less of the "quarter deck" style in their management afloat, if they are to compete successfully with other ships or companies. We are noenemy to strict discipline; in days now long gone by, the ship we then commanded was once termed the "Liverpool Man-of-War" by some of our facetious fellow skippers. We accepted the banter as a compliment, and proved to them that we could do our work of discharging cargo rather better than any of them, and had a contented ship's company.

However great a man may consider himself on his own quarter deck, he can perfectly maintain his position as commander, and ensure the respect of his officers and crew, although he strictly and consistently attends to the details of his duty. Surely it would not be too much to make an inspection of the ship above and below, engine room and all, twice a day. Officers should be allowed to do their duty without undue interference. There should be a hearty, genial pulling together of all the executive. If there are more officers than there is full occupation for, their services should be dispensed with.

We have voyaged much in later years on steamers, and for careful management and practical efficiency of officers and men, for attention to their duties, on the part of commanders, we prefer the Cunard Line to any other. We think the plan in the Peninsular and Oriental service of the officers messing in the cabin with the passengers is a mistake; they would feel much more independent, much more comfortable in a mess of their own, and have less inducement to mix themselves up with the inconsistencies and caprices of passengers.

An enormous and unusual quantity of rain has fallen at Madras during the past three weeks, theweather wise say there has been a cyclone outside. A few days before we arrived, the master attendant signalled the ships in

the roads to go to sea, the steamers went and returned next day; one sailing ship only put to sea, the other three remaining. The one that went out was lost near Pondicherry, how, is as yet unexplained; she was two-thirds loaded, but the circumstances of her loss will no doubt be investigated

MEXICANO.

CAPE BON.

To the Editor of the Nautical Magazine.

Mr. Editor,—In the June number of the *Nautical Magazine* for 1872, I read an article from your correspondent, reporting the existence of a strong current setting towards Cape Bon when the wind prevails from the N.N.W. I also note his remarks about there being no light on Cape Bon. This is to be deplored very much. The whole of the coast from Cape Ivi to Cape Garde is very well lighted, but from the latter Cape to the Dog Rocks there is no light at all, especially when we consider that between the two lies the island of Galita and the dangerous rocks on which H.M.S. *Avenger* was lost with nearly all hands. I would strongly recommend a light on Cape Bon, but I would more strongly recommend a good light on Galita Island or somewhere in the vicinity of the Avenger Rocks; many a shipmaster would thus be saved a great deal of anxiety when navigating hereabouts on a dark blustering night, as in many cases he has to go miles out of his straight course to make sure of clearing those dangers. I write this from experience, and I have heard many shipmasters express the same opinion.

I remain, dear Sir, yours respectfully,

GEO. C. COUTTS.

Malta, Jan. 4th, 1873, steamship *Artos*.

[We specially thank our correspondents for letters of this sort. As the *Nautical* finds its way into every Admiralty in the world, suggestions of this sort are sure to have their effect.—Ed.]

CAST-IRON.

To the Editor of the Nautical Magazine.

Glasgow, 12th November, 1872.

Sir,—The article on cast-iron *versus* copper in your valuable periodical was read by me with much pleasure, as I do not think our old friend cast-iron should be lightly cast aside. Let him be painted as black as can be, he has still some good parts in him, that can be turned to advantage if you use him well.

In the course of the article a remark was made as to the testing of wrought-iron, that the test should not be over one-third of the breaking

weight or ultimate strength of the material. This is a subject on which I have long held the same opinion. The frequent breaking of chain-cables, which takes place so unexpectedly with very little strain upon them, is to be accounted for by the overtesting that takes place in the cable testing machines. Good bar-iron may be said when welded together as a chain-cable to have a mean average strength of twenty-four tons per square inch of its sectional area, which would give a testing weight of one-third, or eight tons per square inch of its sectional area; but, on examining Lloyds' rules for the testing of chains, I find that the testing weight put on is about a eleven and a half tons per inch section, and if the chain has to be substituted for a larger one, it is subject to a test of about thirteen tons per square inch of its sectional area. It will thus be seen how large a proportion the test bears to the ultimate strength of the chain-cable. I have seen a chain with a certificate from a testing machine, as having passed the test, of which the portion broken for breaking strain, gave way at a little over fifteen tons per square inch, and yet this chain complied with the rules of the Testing House, and was entitled to a certificate. I have to add that on the *maker's* attention being drawn to it, they at once withdrew the chain, although it weighed over twenty-two tons, and supplied another which gave a breaking strain of nineteen tons per square inch.

This is a subject that calls for immediate attention, as on the elasticity of the chain-cables of a ship many a life may depend.

I am, Sir, your obedient servant,

F. W. WYMER.

Earthquake Waves in the Pacific.—According to the *San Francisco Alta*, the United States Coast Survey self-registering tide-gauges at San Diego, San Francisco, and Astoria, indicated the earthquake waves of August 23rd with great precision. Accurate details from Honolulu, and from the coast survey party among the Shumagin Islands, to the south of Alaska, would enable the physicist to state pretty exactly the position of the earthquake's first surface manifestation. It appears, however, that the wave reached Honolulu about two hours earlier than it did the American coast at the mouth of the Columbia River; about two hours and three-quarters earlier than at the Golden Gate; and about four hours earlier than at San Diego. From this it is inferred that the earthquake occurred near the most north-easterly of the Japanese Islands, and certainly not to the south of them.

UNITED STATES NAVY LIST.

From the "Nautical Gazette" of New York.

The following is a list of the vessels of the United States Navy now in commission and fitting out, and their present station :—

Asiatic Station.

Name.	Guns.	Station.
Hartford, s.s.	18	Gibraltar, Nov. 28.
Lackawanna, s.s.	10	Shanghai, Oct. 18.
Iroquois, s.s.	6	Shanghai, Oct. 13.
Ashuelot, p.s.	6	Tien-tsin, Sept. 17.
Monocacy, p.s.	6	Shanghai, Oct. 22.
Saco, s.s.	8	Shanghai, Oct. 22.
Yantic, s.s.	8	Aden.
Palos, s.s.	6	Shanghai, Oct. 2.
Idaho, s.	†7	Yokohama.

European Station.

Wabash, s.s.	45	Nice, Nov. 28.
Brooklyn, s.s.	20	*En route* to Naples, Nov. 1.
Congress, s.s.	16	Malta, Nov. 20, bound east.
Plymouth, s.s.	12	Nice, Nov. 28.
Shenandoah, s.s.	11	Marseilles, Nov. 17.
Wachusett, s.s.	6	Nice, Nov. 28.

North Atlantic Station.

Worcester, s.s.	15	Key West, Nov. 29.
Canandaguia, s.s.	10	Key West.
Wyoming, s.s.	6	Key West, Dec. 15.
Shawmut, s.s.	8	Key West.
Terror, i.c.	4	Key West.
Nipsic, s.s.	8	C. Haytien, Nov. 27.
Pawnee, s.	†2	Pensacola.
Saugus, i.c.	2	*En route* to Key West, Dec. 2.

South Atlantic Station.

Lancaster, s.s.	22	Rio, Oct. 24.
Ticonderoga, s.s.	11	Rio, Sept. 24. Bound South.
Wasp, p.s.	1	Montevideo, Oct. 24.

Pacific Station.

California, s.s.	21	San Francisco, Nov. 13.
Pensacola, s s.	22	Sailed Valparaiso, Oct 30.

† Howitzers.

PACIFIC STATION.—*Continued.*

Name.	Guns.	Station.
Benicia, s.s.	12	Sailed for Sandwich Isles, Dec. 7.
Saranac, p.s.	11	San Francisco, Nov. 23.
Omaha, s.s.	12	Sailed, Funchal, Nov. 21.
Tuscarora, s.s.	6	Callao.
Narragansett, s.s.	5	Cruising S. Pacific.
Onward, s.	3	Store ship, Callao, Peru.
FITTING FOR SERVICE.		
Monongahela, s.s.	11	Portsmouth, N. H.
Richmond, s.s.	14	Sailed for Norfolk, Dec. 15.
Judiata, s.s.	8	Fitting at Boston.
HOMEWARD BOUND.		
Colorado, s.s.	45	*En route* to N. Y.
Alaska, s.s.	12	Ordered to N. Y.
St. Mary, s.s.	16	Sailed for Norfolk, Nov. 20.
SPECIAL SERVICE.		
Powhatan, p.s.	17	*En route* to Key West.
Kansas, s.s.	3	Arrived at Key West, Dec. 10.
Portsmouth, s.	51	Ready to sail.
Guard, s.	4	Fitting at N. Y.
Supply, s.	†6	Fitting at N. Y.
Michigan, p.s.	†8	On the Lakes.
Frolic, p.s.	†8	V. A. Flag-ship, New York.
Tallapoosa, p.s.	—	Special Navy Yard duty.
Constellation, s.	10	Practice ship, Annapolis.
Santee, s.	49	Gunnery ship, Annapolis.
Dale, s.	8	Practice ship, Annapolis.
Saratoga, s.	8	Naval Academy.
America, y.	—	Naval Academy.
RECEIVING SHIPS.		
New Hampshire, s.	15	Norfolk, Va.
Ohio, s.	5	Boston, Mass.
Vermont, s.	16	Brooklyn, N. Y.
Independence, s.	22	Mare Island, Cal.
Sabine, s.	86	Portsmouth, N. H.

Total, 58 ships and 718 guns.

† Howitzers.

"NAUTICAL MAGAZINE."—JANUARY NUMBER.—ERRATUM.—At page 12, line 14, for year 1668 read 1748.

BOOKS RECEIVED.

"Plan of the International Exhibition at Vienna, 1873," clearly executed, and will be most useful to British exhibitors, as the explanations are all given in English.

"Text-books of Science, the Strength of Materials and Structure," by John Anderson, C.E., LL.D., F.R.S., Superintendent of Machinery to the War Department. This is an extremely valuable little book treating a practical subject in a thoroughly practical manner. Engineering books are in general heavy reading, but this book reads like a story and the information it contains becomes our own without any perceptible exertion to grasp it. It is a new book and first editions are not often perfect, and without detracting from the highest commendation we meant to give it we may point out what we think might be improved in it. Aiming at simplicity the author has sometimes given information without the science that binds the different facts into one perfect whole. Wrought iron is a homogeneous substance, its resistance to shearing, its resistance to torsion, its resistance to transverse breaking, and its cohesive strength have very nearly the same values, and it seems to us that the question of how the various strengths arise from the primary cohesive force should have been more precisely dealt with. This might have been done without departing from the clear and pleasing manner in which the book is written. Not doing so has led to the insertion of the following inaccurate statement which might lead a student to work out an examination question wrongly, by page 131. "*In the case of hollow shafts, by simply cubing the exterior diameter and then deducting the cube of the interior diameter, the difference will give the relative value of the shaft, as an agent to transmit power or motion.*" But this is not in accordance with science, the value of the interior section in a solid shaft was not equal to its value in a shaft by itself, because its position in the large shaft prevents it from exerting its full strength. In the rule given above, the deduction is the full strength of a shaft of the interior diameter. If the interior diameter be half of the exterior diameter the strength value of the interior portion in the solid shaft will be just one half of its strength as an independent shaft, and in such a case by deducting its cube we would be deducting just the double of what should be deducted. If the inner diameter be three-fourths of the outer diameter we should deduct only three-fourths of the cube of the inner diameter, and so on. We will return to this book on another occasion, and in the meantime we cannot too highly recommend it to our readers.

LITERATURE.

We have received from one of our contributors, Mr. F. W. Wymer, of Glasgow, a handy little book of "Tables for Engineers, Shipbuilders, &c.," which we may safely predict will be of great use to those who have not time to go into details of calculations, but who have at once to determine their course of action as to the fitting and equipment of ships, and proportions of engines, boilers, cables, &c., and for this purpose it is to be commended.

Now that telegraphy has develcped into a science, it is not astonishing that literary organs of telegraphic interests and records of electric development should appear amongst us. The *Telegraphic Journal*, a new monthly, promises well; it appears to deal comprehensively with matters relating to telegraphic communication, and cannot fail, we think, to bo valuable and interesting, if continued in the same manner as its two opening numbers. We welcome the new journal, and hope, from time to time, to gather from its columns something of interest to the readers of the *Nautical Magazine*.

GENERAL.

DESIGNS FOR THE PRIZE SPRING SAFETY VALVES.

The following have been received and are now in the hands of the arbitrators. We hope to publish the provisional decision in our next number:—

No. 1. *Fleiss Erndtet Preis.*—One drawing, separate description.
No. 2. *Semper Vigilans.*—Ditto.
No. 3. *A Step in the Right Direction.*—One sheet.
No. 4. *Q. E. D.*—One sheet, separate description.
No. 5. *Post Tenebras Lux.*—One sheet.
No. 6. *Alpha.*—One large sheet and a small lithograph, separate description.
No. 7. *Virgo.*—One sheet, separate description.
No. 8. *Moleculer Vertex.*—One sheet.
No. 9. Ditto, ditto, one sheet.
No. 10. *C. Ax. Carlandar.*—One sheet, separate memorandum.
No. 11. *Cummins Cummins.*—One sheet.
No. 12. *Magellan.*—One sheet.
No. 13. *Primus.*—Two drawings.

No. 14. *Boiling Water.*—Two drawings.

No. 15. *Device two Diamonds Interlocked.*—Two drawings.

No. 16. *Direct.*—One drawing.

No. 17. *Safe, Sure, and Simple.*—One drawing.

No. 18. *Pro Bono Publico.*—One drawing, separate description.

No. 19. *Monogram supposed to be T.A. interlaced.*—One drawing, description pasted on.

No. 20. *Excelsior.*—Three drawings and one small tracing, separate description.

No. 21. *Device, a Foul Anchor.*—One drawing.

No. 22. *Device, Figure of a Swan, and Letter V.*—One drawing.

No. 23. *Mulciber, A.*—One drawing.

No. 23*a*. Ditto *B.*—One drawing.

No. 24. *Device, Britannia and Letters M.S.V.*—One drawing.

No. 25. *Cumæ.*—Two drawings, separate description.

No. 26. *Lancashire.*—One drawing, separate explanation.

We purposely withhold the names of the umpires, as they wish to be and must be left to form their own conclusions without assistance or pressure from outside.

Russian Training Ships and Schools.—A new society has been formed at Moscow "for promoting the commercial interests of the Russian empire at sea." It proposes to establish training schools for sailors in all the principal Russian ports. The State contributes to their expenses under an ukase of the 27th of June. There are, already, four schools of this kind in Courland, one in Livonia, one in the Government of St. Petersburg, and one on the White Sea, but none on the Black Sea, the Sea of Azoff, or the Caspian. Some of the most eminent men in Moscow have joined in the movement.

The Danish Navy.—A new ironclad has just been launched at Copenhagen, in the presence of the Royal family. The vessel measures 230 feet in length, 47 feet in breadth, has 15 feet 6 inches draught, and engines of 2,500 horse-power. It will be armed with four 10-inch guns. The iron armour varies from 5 to 8 inches in thickness. It has a steel point of 6 feet length, and 21 feet thickness, enabling it to act as a ram. The Danish Ironclad Navy is thus raised to 3 vessels and 4 floating batteries. Its wooden steam Navy amounts to 1 line-of-battle ship of 42 guns, 3 frigates of 26, and 1 of 22 guns, 8 corvettes, 5 schooners, and 6 gunboats, all of them screws; and, moreover, 4 paddle-boats. In addition to these, Denmark possesses 1 line-of-battle sailing ship, 1 frigate, 1 cutter, 8 gunboats, and 21 transports.

MERRYWEATHER'S IMPROVED LEATHER SMOKE JACKET.

Our illustration represents an Improved Leather Smoke Jacket, manufactured by Messrs. Merryweather and Sons, the well-known fire-engine makers of London. It consists of a casing of leather covering the head and body as far down as the waist, where it is secured by a strap and buckle. The face is fitted with a pair of plate glass "eyes," and below the "eyes" is a shrill whistle with an ivory mouthpiece, for the wearer

to give any notice to the attendants as to his position. This whistle is also used to give signals as to the requirements of the wearer. The hand-pump shown in the illustration is used to supply air to the man in the jacket. Attached to the waist belt is a "safety line," the other end of which is held by an assistant, whose duty it is to listen for any signal, and in case of danger, if requisite, to haul the wearer from the spot. The safety line is about 60 feet in length, and the hose attached to the air pump varies from 20 to 60 feet. The "Smoke" Jacket is used under a variety of circumstances. It enables persons to enter chemical works in certain parts of which the gases may be too poisonous to breathe. It has also been adopted in oil works, breweries, &c. The chief use of the Smoke Jacket, however, as our illustration clearly defines, is to enable a man wearing it to enter a burning building or ship, approach the flames, and attack the seat of fire with the opposing element without running the risk of being stifled by the smoke. It would obviously be of great service on board ship. It would enable one of the crew to enter the hold and extinguish a fire before it could reach any serious dimensions. As vessels, and particularly steam vessels are supplied with powerful pumps and hose to extinguish fire, the crew might undoubtedly by means of the Smoke Jacket (the cost of which is but a fraction as compared with the results that may be obtained by its adoption), be in a position to extinguish many a fire by nipping it in the bud, and thus save life and property at sea. It costs about £15.

TIMBER LADEN SHIPS.

The months of November and December, 1872, will ever be recorded as black months. In those two months 167 sailing ships, of the aggregate tonnage of 68,400 register tons, were either lost, abandoned, or stranded, or suffered loss of cargo, or damage to hull, crew, &c. Every one of these sailing ships was timber laden. About 13 are known not to have had deck loads. Of the remaining number, 120 certainly had, and the rest probably had deck loads. Of the crews, we can only say that of the 2,000 sailors on board, not 5 per cent. of the number were lost. Of those lives lost in these 167 ships in two months, 83 lives were lost on board ships with deck loads, 1 on board a ship that is known not to have had a deck load, and about 12 on ships of which no record is kept whether they had or had not deck loads. These are British ships, with the exception of 26 Norwegian, Swedes, Dutch, &c., of comparatively small tonnage. Comparing Atlantic voyages with North Sea voyages, we note that 75 out of the 167 wrecks and casualties happened to ships in the Atlantic timber trade, and 92 to ships in the North Sea timber trade. Of the lives lost, 67 were lost in the Atlantic and 16 in the North Sea trade.

Out of the 85 lives lost, all but 16 were lost under the British flag. A few of the ships were new, the majority had no class at all, and many, we should think more than half, were 30 years old and upwards. It is to be hoped that they were insured, as no prudent man should run the great risk of a deck load at this time of the year without first taking such an eminently wise precaution.

LIVES LOST IN BRITISH SHIPS IN THE YEAR 1871.

A GREAT deal has been said about loss of life from casualties at sea. In order to remove erroneous impressions and to propagate fact, we have made a table for the year 1871, for the use of our readers. This table is trustworthy, as it is compiled from official documents issued by the Board of Trade:—

On the Coasts of the United Kingdom.

British ships lost, 1,668 ... Tonnage, 413,000 ... Lives lost, 530.

On the Coasts of British Possessions Abroad.

British ships lost, 335 ... Tonnage, 94,470 ... Lives lost, 308.

On the Coasts of Foreign Countries.

British ships lost, 550 ... Tonnage, 228,868 ... Lives lost, 202.

At Sea.

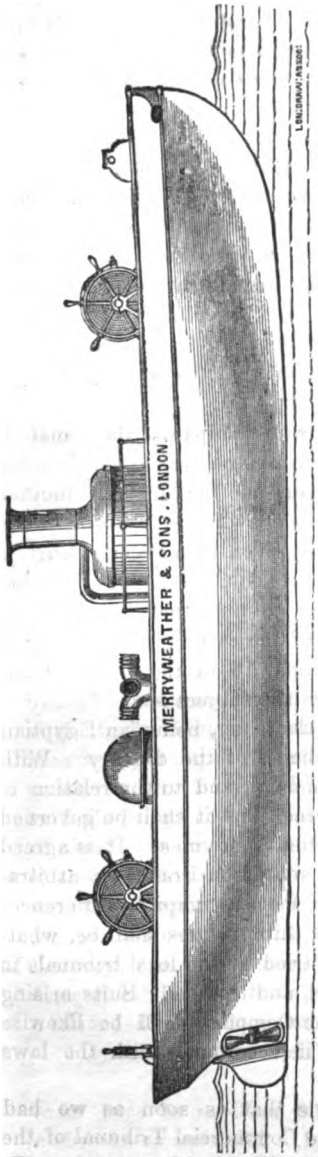
British ships lost, 869 ... Tonnage, 371,833 ... Lives lost, 1,149.

Total losses of British ships and lives therein, 1871. } Ships lost, 3,422; of tonnage, 1,108,171; lives lost, 2,189.

This loss in itself is not great considering the hazardous nature of many voyages. It amounts to 8·3 per 1000 per annum of seamen afloat. It is clear that to meet one year's waste of life in British ships, from wrecks and casualties alone, 2,500 boys would have to be turned out by training ships in each year, if British *trained* boys only are to be supplied as seamen for the Mercantile Marine. In other words, if we once begin to train boys for the sea, and to require that only trained boys shall be sent to sea, and that each boy shall have two years' previous training, 5,000 boys must be under training continuously (which, at £20 per head per annum, would cost £100,000) to replace the number of seamen annually drowned. It would be quite this, as the number of lives lost at sea in 1871 is *much* below the annual average. There are other sources of waste that make a more severe drain on crews in the Mercantile Marine than drowning.

EGGS.—In the year 1872 upwards of 558 millions of eggs were imported into the United Kingdom from abroad. The average exceeds a million and a half a day; and we paid more than £5,000 a day for these foreign eggs imported.

FLOATING STEAM FIRE ENGINES.



THIS illustration is a drawing of a nove Floating Steam Fire Engine, now coming into general use in our large rivers and docks. The "Floats" on the River Thames are very large, and take a long time to get to the scene of action, and often, on account of their great draught, are obliged to be moored a long way from shore. This occasions much loss of time, because the hose has to be carried from the "Float" to the burning building by means of small craft. The novelty of this Floating Steam Fire Engine consists in its readiness for immediate use. It may be moored in a dock, and, upon the alarm of fire, steam can be raised in it from cold water in eight to ten minutes from the time of applying the match to the fire. The speed of the boat is ten statute miles per hour. The propelling power consists of a pair of small inverted single cylinder engines, driving twin screws. The fire engine, worked by the same boiler as the screw engines, is placed horizontally either before or behind the boiler, and the one that we are now more particularly noticing is capable of pumping 1,000 gallons per minute, and throw a jet to a height of over 200 feet. This Float has been built by Messrs. Merryweather of London, for the Imperial Dockyard at Wilhelmshaven, and is fitted with suction hoses, by means of which sunken vessels may be speedily pumped out and floated. A machine of this size will pump eight to twelve powerful jets of water simultaneously. Some months since, the makers supplied one of the foreign Governments with a "Float" of similar power, the boat of which was 45 feet long, by 8 feet 6 inches deep, and draft 2 feet. It was tried on

the river in the presence of several members of the Metropolitan Board of Works. Steam was raised in nine minutes from cold water, the speed attained was ten miles per hour, and six jets of water were projected to an altitude of 140 feet each. To show the facilities with which the little craft could be brought up contiguous to a building on fire it was "beached;" a man jumped ashore with hose and hand-pipe in hand and returned on board in less than three minutes; the boat then went astern, and was on her way at full speed down the river. The cost of the engine is about £2,500, but the makers have produced some for £700, one of which was sent to Venice. Messrs. Merryweather have, in conjunction with Mr. Wm. Maw, brought out a floating barracks for this description of engine, and it is expected that ere long we may find this valuable addition made to the Metropolitan Fire Brigade.

THE SUEZ CANAL.

It is not possible that any country or state whose ships use the Canal in common, can allow any one European State to assume the right of deciding questions arising between the Canal Company and the ships of another State using it. This has all along been an awkward feature. The decision in the case of Messageries Maritimes, given by a French Court, is not worth the paper it is written on. The French Court has no jurisdiction whatever in the case. We are glad to find that the Ottoman Government have at last taken this view of the case, and have spoken out as follows. The following is what Article 16 of the firman of the Sultan, sanctioning the concession, states on the subject:—

"'The Maritime Suez Canal Universal Company, being an Egyptian Company, is governed by the laws and usuages of the country. With regard, however, to its constitution as a company, and to the relation of he shareholders among themselves, it is agreed that it shall be governed by the laws which apply in France to Societies Anonymes. It is agreed that all questions under this head shall be settled in France by arbitration, with an appeal to the Imperial Court of Paris as umpire. Differences arising in Egypt between the Company and third parties shall be, whatever the nationality of the latter may be, tried by the local tribunals in the form established by the laws, usages, and treaties. Suits arising between the Egyptian Government and the Company shall be likewise referred to the local tribunals, and decided in accordance with the laws of the country.'

"It was in consequence of this Article that as soon as we had cognisance of the judgment delivered by the Commercial Tribunal of the Seine in the suit instituted by the Messageries Maritimes against the Suez Canal Company, we did not hesitate to protest, not only on

the ground of the incompetency of that tribunal to interpret the act of concession—as M. de Lesseps pretends—but also, and mainly, on the ground that the Canal Company could not accept the jurisdiction of the French Tribunal without violating the firman granting the concession. Your Excellency will easily understand that we cannot allow any one to believe that we shall ever permit the Company's withdrawing from the jurisdiction under which it is placed by the very act which has given it its existence. Consequently, the Imperial Government has desired his higness the Khedive of Egypt to intimate to the Company that it must strictly conform to the firman of concession in its relation with third parties. The rights of the Imperial Government are too well founded to be shaken by the arbitrary construction contained in M. de Lesseps' late publications. But the doubt which such publications tend to raise with regard to jurisdiction might cause the public to take false steps, and serious inconvenience might ensue.

"I have to request your excellency to communicate this despatch to his Excellency the Minister for Foreign Affairs of France, and to deliver him a copy of the same. "KHALIL SHERIF."

The Ottoman Government have further given their opinion, that before anything is done a Conference must be held with the Great Powers, as to the "unification" of tonnage. This Conference is to meet at Constantinople.

SAN FRANCISCO.—CRIMPING.—In consequence of the scarcity of seamen, a bounty of forty dollars has been demanded by the sailors' boarding-house keepers, and has been paid by shipmasters, for every seaman shipped at San Francisco. Not a halfpenny of this bounty has gone to the seaman. A Shipping Commissioner, whose duties are somewhat similar to those of a superintendent of a Mercantile Marine office in the United Kingdom, has been appointed, and his appointment gives hopes of improvement. The British Consul has stirred up the British shipmasters, and they are "striking" against the continuance of paying such heavy black mail, or, as they call it, "blood money" to crimps. The crimps on their side are "regulating" the wages; and have fixed them at forty dollars per man per month for ships to England. It is to be hoped that owners of ships in the United Kingdom will support the masters and the Consul in the action taken against the crimps.

MR. S. R. GRAVES, M.P.—It is our painful duty to record the death, on the 18th Jan., of one of our staunch supporters, Mr. S. R. Graves, member for Liverpool. He had been at dinner at Stafford House, with the Duke of Sutherland, had been in remarkably good spirits, and returned to the Euston Hotel shortly before midnight. At 8 a.m., feeling unwell, he

rang for an attendant, and he died at about 4 o'clock a.m. Mr. Beazeley was with him when he suddenly expired. Mr. Graves was fifty-four years old, had been settled in business as a merchant and a shipowner in Liverpool for twenty-five years. He belonged to an old Irish family. He entered Parliament, as the Conservative member for Liverpool, in 1865. In public life he was eminently successful, and in private much beloved. He had the distinguished honour of receiving more votes than any member who has yet been returned to the House of Commons. He was not only respected by his fellow-citizens, and by his colleagues in Parliament, but was held in favour by the Royal family, for on two occasions the Royal princes have been his guests. He was so much struck with the power and good qualities of Prince Arthur that he went out of his way and set aside etiquette to make his opinion known in high quarters. His Parliamentary life was full of promise, and he was certain of a high post under the Conservative Administration. His loss to the country is great. No one in Parliament had so thorough a mastery over questions affecting ships, seamen, and our safety at sea, as he had. Honest, open, courteous, and patient, free from peculiar views and crotchets, with a sound head for business, and a warm heart for friends. His departure has left a void, that will never be filled amongst those who knew him personally, a void that in the councils of the nation is of serious moment.

Government and Explosives.—It is said that the establishment of a new bureau, at the Home Office, is contemplated, and that the initiatory step has been taken by the transference from the War Office of the services of Major Majendie. The new bureau will have specially under its care the licensing for manufactories, sale and storing for the use of all explosives, a function which is at present shared in a loose manner between the local magistrates and the Home Office. A Bill is now in preparation, and will be introduced during the ensuing session, conferring the necessary powers upon the Home Office.—*Naval and Military Gazette.*

Boys for the Royal Navy.—It appears from the report of Mr. Wade, Staff-Surgeon of Her Majesty's ship *Impregnable*, for 1871, that in that year 2,897 boys were entered for training for the Royal Navy. At the end of the year 1871 the number under training was 3,558. Country-born lads are found to be superior to town lads. The average time under training is but 13 months; yet the physical development is satisfactory, and the boys are sent from the training ships in a greatly improved condition, and from awkward slouching lads have become apt and smart, fit to make the seamen who are the finest body of men under the Crown. The number that came under medical examination was 2,090, and 447 were rejected—128 *on account of the circumference of the chest being*

below the standard, 70 for being phthisical, 43 for weak development, 41 for imperfect sight, 88 for decayed teeth, 26 for varicocle, 17 for scrofula. Recently entered boys frequently suffer from the sudden change of diet, especially boys from Ireland. These have been accustomed to a diet almost wholly farinaceous, they have good appetites, and when satisfied with meat and pudding they find it more than they can digest. A boy died from accidentally swallowing some tobacco he was chewing. Seventy-one boys were invalided, nineteen of them for disease of the heart. In the year 1871, 2,339 second-class boys were sent from training ships to sea service to supply the place of Blue Jackets. In mercantile training ships 2,500 boys will, if they are all educated for the sea, represent an efficient total of 2,000.

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and was much admired by nautical men." On this we have to observe that if "Moses and Sons" (under which title we, of course, include all enterprising and honest outfitters), find it to their advantage to keep these "splendid" cutters afloat to sell "slops" to poor Jack, is it not likely that, under a voluntary system, cutters equally good would be kept afloat for pilotage services?

The American s.s. "Missouri."—The American s.s. *Missouri*, was lost by fire on the 22nd October, 1872, near the coast of the Bahamas. An inquiry was held at Nassau on the 1st, 2nd, and 6th November, before E. B. A. Taylor, Esq., magistrate, and W. H. Stuart, commander of the lighthouse yacht, *Richmond*, as nautical assessor. The crew numbered 58, and the passengers 31; of these, 16 are known to be saved, and 73 are supposed to have perished. It appears that the vessel was hurriedly put to sea without a trial of her machinery, although she had had new boilers, and the machinery had been repaired. No trial trip had been made. The felting of the boilers was either wanting or defective, and there is little doubt the fire originated from the heating of the boilers. The boats were secured in such a manner as to be difficult to be lowered. On the alarm of fire, all was confusion; there was no discipline, no organisation or combined effort to save life, each man acted independently to save himself, and no attempt was made to save the females. Of four boats, two were lost in lowering, and a third one, when last seen, appeared to be full of water. No attempt was made to stop the progress of the fire, or lay the vessel to, to get out the boats to leeward, or to save the females.

Scurvy in the Mercantile Marine.—The statistics of the Seamens' Hospital show that forty cases of scurvy have been admitted during the past year, ten of which came from foreign ships. The *Lancet* repeats a conviction that, "although by the action of the Merchant Shipping Act of 1867, scurvy has diminished by about 70 per cent. in the British Mercantile Marine, the time has now arrived when the Board of Trade can fairly legislate for scales of provision, in proper accordance with the various feeding facilities that exist in the present day. When the duties appertaining to the Emigration Office are fairly under the supervision of the board, a general overhauling of scales of diet will take place." It is very kind of the *Lancet* to say this: but on the other hand we hope that, if our contemporary means that the overhauling is to be done by the Government, nothing of the sort will happen. We wish to see things left as they are as regards diet. We shall have to interfere with clothing next, if once we begin. We wish to see better scales of provision adopted, but the way to do it is to let the seamen settle the question with the shipowner.

Austrian Arctic Expedition.—According to the Vienna *Archiv für Seewesen*, the main object which this expedition, now prosecuting its

researches, has been ordered to keep in view, is to gain Behring's Straits, and return by that route, the possibility of which depends essentially on the influence which the great Siberian rivers exercise on the ice in the Arctic Ocean. Any attempt to reach the North Pole—which it has been erroneously stated is the primary aim of the expedition—is to be entirely subordinated to this end, and no such endeavour is on any account to be made unless there appears to be a certainty of also reaching Behring's Straits in the course of the two or three years at the disposal of the explorers. In the event of shipwreck, or being compelled to abandon the vessel, the party is instructed to make for the mouth of one of the great Siberian rivers—the Jana, Lena, Kolyma, Indigirka, &c. If it is possible to land on passing Cape Tscheljuskin, news is to be left there, as also at the most northerly of New Siberian Islands. During last summer, a depôt of provisions and fuel was established on the eastern extremity of Nova Zembla, to serve as a place of refuge in the event of disaster occurring before reaching Cape Tscheljuskin. The ship itself is stored for three years.

OUR OFFICIAL LOG.

INSTRUCTIONS TO SURVEYORS OF STEAM SHIPS.—MACHINERY, HULL, AND EQUIPMENTS.

The following is the substance of the Board of Trade regulations respecting the survey of steam ships :—

(1.) The machinery and boilers must be sufficient for the service intended and in good condition.

(2.) All inlets or outlets in the bottom or side of a vessel, near to, at or below the deep load water line must have cocks or valves fitted between the pipes and the ship's side or bottom, such cocks or valves must be attached to the skin of the ship, and be so arranged that they can be easily and expeditiously opened or closed at any time. The cocks, valves, and the whole length of the pipes should be accessible at any time.

(3.) Stop valves must in every case be fitted between the boilers and the steam pipes, and the whole of the steam pipes ought to be accessible at any time.

(4.) Each boiler must be fitted with a safety valve so constructed as to be out of the control of the engineer when steam is up ; but lifting or easing gear must be fitted.

(5.) The parliamentary safety valve is in all cases to be of at least the same area as the ordinary safety valve on the same boiler, and the pressure on the ordinary safety valve is not to be less than that on the parliamentary safety valve and it is extremely desirable that there should

be an ordinary safety valve in addition to the parliamentary valve. The safety valve should have at least an area of one half square inch for every square foot of fire grate surface, and care should be taken that the valve has sufficient lift, and that the waste steam pipe is sufficiently large, and in the case of lever valves if the lever is not bushed with brass, the pins must be of brass ; iron and iron working together must not be passed.

(6.) The pressure to which the boiler may be worked must be fixed by the surveyor in accordance with the strength of the boiler. In flat surfaces the pressure allowed should not exceed 5,000 lbs. to each effective square inch of sectional area of stay.

(7.) No boiler or steam chamber is to be so constructed, fitted, or arranged so that the escape of steam from it through the safety valve required by the Act of Parliament can be wholly or partially intercepted by the action of any other valve.

(8.) Each boiler must be fitted with water guage and steam guages, &c., that is to say, each boiler must be fitted with all fittings as complete as if there was only one boiler.

(9.) Superheaters that cannot be easily entered must have a sufficient number of doors fitted so that a thorough inspection of all parts of the superheater can be made through the openings.

(10.) Donkey boilers that are in any way attached to or connected with the main boilers or with the machinery used for propelling the vessel must be surveyed and fitted the same as the main boilers, and have a water and steam guage, and all other fittings complete, including a parliamentary safety valve.

(11.) The surveyor should see boilers tested by hydraulic pressure up to at least double the intended working pressure previous to the boilers being placed in the vessel to test the workmanship, &c., but the working pressure is to be determined by the stay power, thickness of plates, and strength of rivetting, &c., and not by the hydraulic test. When the boilers are in the vessel the surveyor may, at any time he thinks it necessary before he gives a declaration, have them tested by hydraulic pressure to satisfy himself as to any doubtful part, or of places not easy of access, care being taken in the case of old boilers not to overstrain them. Surveyors should also pay particular attention to the examination and testing of steam pipes.

(12.) The hull of the vessel must be properly constructed, sufficient for the service intended, and in good condition.

(13.) There must be a sufficient number of scuppers and relieving ports.

(14.) The coamings must be sufficiently high and strong.

(15.) The skylights must be strong and securely fitted, and, where necessary, shutters must be fitted for bad weather.

(16.) The bunker lids must be so fitted that they can be easily and securely fastened.

(17.) The bulwarks must be of sufficient strength and height for the service intended.

(18.) All ports must be properly fitted and secured, and there should be some spare blanks, or dead lights, in case any of the glasses get broken.

(19.) There must be rudder pendants, strongly secured to the rudder at the after part, so that the vessel can be steered, in case of accident to the tiller or the rudder head.

(20.) There must be in each compartment a hand pump of sufficient size, which can be worked from the upper deck, with a rose or perforated box, of sufficient size for each pump. There ought to be fitted, at the bottom of each bulkhead, a valve or cock, which can be opened and shut from the upper deck, and there ought to be means for ascertaining the depth of water in each compartment.

(21.) In all sea-going screw vessels there must be a strong water-tight deck, over the cast-iron tube aft, so as to make a tank round the tube; and a properly fitted man-hole at the top or fore end. Collision bulkheads ought to be fitted in sea-going vessels, and if they are not fitted, the surveyor should note the fact.

(22.) The masts, sails, and rigging must be good and sufficient for the vessel.

(23.) The anchors must be of sufficient weight and number for the vessel, and the cables of sufficient strength and length. The spare anchors ought not be stowed below, but kept ready in case they should be required.

(24.) The vessel must be supplied with a sufficient number of good hawsers.

(25.) A suitable gun or mortar must be provided, with not less than 12 charges of powder, enclosed in a proper magazine, and a powder flask or horn for priming; also 12 blue lights, and 12 rockets, with 12 sticks; but 6 of Holm's Patent Storm and Danger Signal Lights may be substituted for 6 blue lights or port fires; and there must be provided cases for the rockets, blue lights, &c.

(26.) A fire hose must be provided, with a goose neck and conductor, and so fitted that the hose can be connected either with the main or the donkey engine, and used with either. It must be of sufficient length to reach any part of the vessel, and also of sufficient strength to stand the pressure when the engines are working at full speed, and with the conductor connected.

(27.) The side lights, mast head, and anchor lights must be according to the regulations, and ought *not to be less* than as follows:—

Side Lights.—Port and starboard, with lenses 8 inches across the chord of the arc, and 5 inches in height, and not less than one-third of a circle, and the frames 11 inches in height, exclusive of the chimney, and 9 inches back and side, and to show over an arc of 10 points, at a distance of 2 miles. The screens for the side lights should be at least 3 feet from the front of the light, and not fixed abaft the greatest beam of the vessel, and should not be secured to the rigging. The mast-head light to show 20 points, at a distance of 5 miles. A fork should be fixed to the mast, and the lanthorn should be fitted so that the guides or eyes on the sides of it shall slip on to extended prongs of the fork. Anchor light 8 inches diameter. The wicks of the lamps should be of from $1\frac{3}{4}$ inches to 2 inches, except when paraffin is used, then the wicks should not be less than 1 inch. When paraffin is used, the lamps ought to be larger than the sizes given above.

(28.) Leads and lines must be provided, and properly marked.

(29.) An efficient steam whistle, at least 8 feet above the deck, and situated forward of the funnel, or if there be more than one funnel, forward of the foremost funnel. Also a bell and foghorn should be provided.

(30.) Life buoys, with lines attached, and fitted with a toggle and beckets, or other method, by which they can be quickly thrown overboard, if required; and they must not be lashed or seized to the rail, or any other part of the vessel, but must be kept so as to be ready at a moment's notice, in case of accident. The life buoys must be made of cork, and not merely a canvas ring, stuffed with rushes, cork shavings, or cuttings.

(31.) The accommodation for the passengers must be sufficiently lighted and ventilated.

(32.) There must be a sufficient number of properly adjusted compasses and deviation cards for the same.

(33.) The boats must be efficient and at least equal in cubic contents to the following table, fitted with a complete set of oars, and some spare ones, two boat-hooks, two plugs, a proper and serviceable bailer, a set and a half of thole pins or crutches. All of the plugs, bailers, and thole pins must be made fast with lanyards, and kept in the boats ready for use. Life lines should be fitted to the davits long enough to reach the water, when the vessel is light, and allowance made for the extreme roll of the ship. Lanyards should be fitted to the rudders of all the boats. The buoyant apparatus must go along the sides and into the ends of the life-boats, and must be sufficient, and properly secured. All boats should be hung in davits, and kept ready for service at any moment.

TABLE OF THE DIMENSIONS OF BOATS REQUIRED TO BE CARRIED BY PASSENGER STEAMERS.

The measurement is taken outside for length and breadth and inside for depth, measuring from top of gunwale.

Number of Tons Register.	EITHER							OR						
	Number of Boats.	Dimensions. Length.		Breadth.		Depth.		Cubic Contents.	Number of Boats.	Dimensions. Length.		Breadth.		Depth.		Cubic Contents.
		Ft.	in.	Ft.	in.	Ft.	in.	Ft. in.		Ft.	in.	Ft.	in.	Ft.	in.	Ft. in.
1,000 and upwards.	1	18	0	5	6	2	3	222 9	1	18	0	5	6	2	3	222 9
	2	24	0	5	6	2	6	660 0	2	24	0	5	6	2	6	660 0
	1	27	0	8	6	3	8	841 6	2	22	0	5	6	2	6	605 0
								1,724 3								1,487 9
	2 Life	28	0	8	6	3	6	1,666 0	2 Life	28	0	8	6	3	6	1,666 0
	6	Boats of - - -						3,390 3	7	Boats of - - -						3,153 9
800 to 1,000	1	18	0	5	6	2	3	222 9	1	18	0	5	6	2	3	222 9
	2	26	0	6	6	2	8	901 4	2	26	0	6	6	2	8	901 4
	1 Life	26	0	8	0	3	8	762 8	2	22	0	5	6	2	6	605 0
	4	Boats of - - -						1,886 9	5	Boats of - - -						1,729 9
500 to 800	1	18	0	5	6	2	3	222 9	1	18	0	5	6	2	3	222 9
	2	24	0	5	6	2	6	660 0	2	24	0	5	6	2	6	660 0
	1 Life	26	0	8	0	3	8	762 8	2	22	0	5	6	2	6	605 0
	4	Boats of - - -						1,645 5	5	Boats of - - -						1,487 9
360 to 500	1	16	0	5	6	2	3	198 0	1	16	0	5	6	2	3	198 0
	2	24	0	5	6	2	6	660 0	2	24	0	5	6	2	6	660 0
	1 Life	25	0	7	0	3	6	612 6	2	22	0	5	6	2	6	605 0
	4	Boats of - - -						1,470 6	5	Boats of - - -						1,463 0
240 to 360	1	16	0	5	6	2	3	198 0	1	16	0	5	6	2	3	198 0
	1	22	0	5	6	2	5	292 5	1	22	0	5	6	2	5	292 5
	1 Life	22	0	6	6	3	3	464 9	2	22	0	5	6	2	6	605 0
	3	Boats of - - -						955 2	4	Boats of - - -						1,095 5
120 to 240	1	14	0	5	0	2	2	151 8	1	14	0	5	0	2	2	151 8
	1 Life	20	0	6	0	3	0	360 0	2	22	0	5	6	2	6	605 0
	2	Boats of - - -						511 8	3	Boats of - - -						756 8
60 to 120	1	14	0	5	0	2	2	151 8	1	14	0	5	0	2	2	151 8
	1 Life	16	0	5	6	2	9	242 0	2	18	0	5	6	2	4	462 0
	2	Boats of - - -						393 8	3	Boats of - - -						613 8
Under 60	1 Life	14	0	5	0	2	2	151 8								

If the number of the boats in this column is carried, one of them must be a launch of, at least, the capacity named.

If the number of boats in this column is carried, the cubic contents (equal in their aggregate to the cubic contents required) may be spread in any way over the whole number of boats. The largest boats or boat must be life boats.

(34.) Builders, owners, and others would save themselves much trouble if they would, when in doubt, refer at an early moment to the Board of Trade; by neglecting to do so much valuable time or money may be unnecessarily expended. Surveyors should point out, as far as possible, when inspecting a vessel which is intended for the passenger trade, any defects or alterations they may deem necessary so as to prevent delay to owners afterwards.

(35.) Delays and inconvenience may, to a great extent, be prevented if notice is given when a vessel which requires a certificate is undergoing repairs, or is in dry dock for any other purpose; as this notice might obviate the occasional necessity of redocking a vessel at an inconvenient time, and at great expense, for the surveyors to examine the outside of the hull.

In order to prevent delays, at least three clear days' notice in writing should be given when a survey is required. A form of application can be obtained at any Mercantile Marine office. The surveyors will attend to surveys in the order in which the applications are received. The application for survey should contain an explicit statement of the place where the ship will be lying for survey or inspection at the time named.

The application should *not* be addressed to a surveyor by name, but to the surveyor or surveyors collectively for the district. It should state the exact place where the vessel will be lying, and the time when she will be ready for survey or inspection.

(36.) If, when a surveyor is requested to survey a vessel, the owners are careful to give orders that things shall be in readiness as pointed out below, delay will be prevented:—

1. Certificate of Registry.
2. Master's Certificate.
3. Mates' Certificate.
4. Engineers' Certificate.
5. Last Passenger Certificate.
6. Compass Adjustment certificate or certificate signed by master and mate, and attested by owners.

} On board at the time of Survey.

7. *Boats*, uncovered and ready to lower with all gear and spare gear in.
8. Pumps, rigged in their places.
9. Spare tiller, shipped in its place.
10. Side lamps, mast-head light, and anchor light on deck ready to be put into their places if necessary.
11. Life buoys, in readiness with lines attached.
12. Leads and lines, on deck.

13. Cartridges, blue lights, and signal gun or mortar, ready for inspection.
14. Fire hose connected and coupled, and stretched along the deck. The conductor connected.
15. Decks, cabins, steerages, and all other passenger space clean and clear and in a fit state for measurement.
16. The holds empty, the limber boards up, bilges clean, cocks and valves at the bottom of the bulkheads exposed for examination, a safe and proper ladder for going up and down the holds.
17. Boilers, including the donkey boiler if connected with the main boiler or engine, empty, clean, and quite cool, and the man and mud hole doors off the boilers and superheaters.
18. Furnace bars, out of each boiler and the bridges down.
19. Furnaces, flues, smoke-boxes, and tube-plates, scraped and swept clean.
20. The safety valves and weights, out of each boiler, and a means on board for weighing them. A correct spring balance should be provided when the valves are fitted with levers.
21. All pipes and cocks at the ship's side or bottom, accessible to the surveyor.
22. Shaft tunnel, clean and clear, for the proper examination of the plummer blocks, bearings, and stuffing box.
23. Chain cables on deck and properly ranged at least once a year, so that the length can be accurately obtained as well as the condition of the cable. The pins and bolts should be knocked out and put in again before finishing the survey.
24. When vessels are in dry dock or on a slip, which they must be at least once in twelve months, the examination will be made by the surveyor after the bottom is cleaned, but *before* it is painted or coated.

BOARD OF TRADE INQUIRIES AT HOME.

56. *Royal Adelaide*, of Liverpool, stranded on Portland Beach, 25th November, 1872. Inquiry ordered, and held at Greenwich on the 21st, 23rd, and 24th days of December, 1872, before J. H. Pateson, Esq., stipendiary magistrate, with Captains Harris and Hight as nautical assessors. Master in default. Casualty the result of want of caution in entering Portland Harbour. Certificate suspended for twelve months.

58. *Leader*, of Great Yarmouth, in collision with the *Affyhan*, of South Shields, on the Well Bank, 30th November, 1872. Inquiry ordered 18th December, and held at South Shields on the 30th and 31st

December, and 1st January, 1873, before Terrot Glover, Esq., and Edward Moore, Esq., J.P., with Commander James F. Prowse, R.N., as nautical assessor. Both masters in default, more particularly on the part of the master of the *Affghan*, in neglecting duly to observe articles 12 and 20 of the regulations for preventing collisions at sea. He was admonished to be more careful in future. His certificate was returned.

59. *Polka*, of North Shields, stranded on Maplin Sands, 1st December, 1872. Inquiry ordered 17th December, and held at North Shields on the 3rd January, 1873, before John Foster Spence and Joseph Green, Esqrs., J.P., with Commander James F. Prowse, R.N., as nautical assessor. The Court was of opinion that the master should have been more careful, and used the lead frequently; but having regard to his antecedents, and other circumstances of a mitigating character, returned him his certificate, with an admonition to exercise more caution in future.

60. *Carolina*, of Hull, abandoned in lat. 44° N., long. 53° 20′ W., on the 14th November, 1872. Inquiry ordered 17th December, but subsequently abandoned.

61. *Sorrento*, of North Shields, stranded on the Goodwin Sands, 17th December, 1872. Inquiry ordered 23rd December, and held at Ramsgate on the 7th, 8th, and 9th days of January, before G. E. Hannam, Esq., and Sir W. M. Coghlan, J.P., with Captains Harris and Steele as nautical assessors. Master exonerated. Casualty caused through the pilot rounding the South Sand Head light too closely, and neglecting to use the lead.

62. *Queen's Own*, of London, stranded near Lysekehl, Sweden, on the 6th November, 1872. Inquiry ordered, and held at Greenwich on the 31st December, and 1st, 2nd, and 3rd days of January, before J. H. Pateson, Esq., stipendiary magistrate, with Captains Harris and Hight as nautical assessors. Master in default. Ship's loss solely to be attributed to bad navigation and neglect of lead. Certificate suspended for six months.

63. *Ceres*, of Belfast, foundered in Belfast Lough, 19th November, 1872. Inquiry ordered 24th December. Proceedings pending.

64. *Germany*, of Glasgow, stranded at the Gironde, 25th December, 1872. Inquiry ordered 30th December. Proceedings pending.

65. *Thames*, of Liverpool, stranded at Richibucto 3rd November, 1872. Inquiry ordered 31st December. Proceedings pending.

66. *Supply*, of South Shields, stranded on Hook Sand, off Poole, 14th December, 1872. Inquiry ordered 3rd January, 1873. Proceedings pending.

67. *Princess Alexandra*, of Fowey, stranded on Fort Mahon, east of St. Vallery, France, on the 6th December, 1872. Inquiry ordered 4th January, 1873. Proceedings pending.

68. *Valid*, of Ardrossan, stranded at Chale, Isle of Wight, on the 4th January, 1873. Captain Wilson, of Lloyds, appointed inspector under section 14 of the Merchant Shipping Act, 1854.

INQUIRIES ABROAD.

111. *Emblehope*, of Newcastle, sustained damage on her voyage from Calcutta, 18th May. Inquiry held at Trincomalee, Ceylon, before R. W. D. Moir, Esq., district judge, Lieutenant R. Jackson, R.N., nautical assessor, and W. E. Gratiaen, receiver of wreck. The injury was caused by the straining of the ship in the heavy weather experienced after leaving Calcutta. No blame attached to anyone.

112. *Jessie Eaton*, stranded on Lagos Bar, 25th January, 1872. Inquiry held at Lagos, before J. H. Glover, president, E. Guichard, and G. F. Pike, members. Stranding caused by the heavy swell on the bar at the time of crossing. Master exonerated.

113. *Noura*, in collision with the *Gneering*, in the Brisbane River, 2nd April, 1872. Inquiry held before the Brisbane Marine Board. The *Noura* in default, in crossing up the river on the wrong side, and starboarding her helm when she should have ported. Master held no certificate.

114. *Albanian*, of Hull, stranded off the Island of Oland, 6th November, 1872. Inquiry held at Stockholm, before G. R. Perry, Esq., Consul, president, J. E. Samson, and R. Grayham, master mariners, Baron F. Wedel Jarlsberg, and Captain T. Werner, nautical assessors. Casualty the result of want of precaution in the navigation of vessel. Certificate suspended for three months.

115. *Wild Rose*, of Whitby, stranded at East London, 25th September, 1872. Inquiry held at East London, before A. R. Ospen, Esq., resident magistrate, and G. Walker, assessor. Casualty occurred through the mismanagement of the mate, who, being in charge, neglected to set sufficient head sail to wear her round. Certificate suspended for twelve months.

116. *George Reed*, of London, stranded on the Malcolm Atoll, 25th September, 1872. Inquiry held at Galle, before H. W. Gillman, deputy judge, and D. Blyth, Esq., assessor. Master and mate exonerated. Casualty occurred in thick weather, and ship's charts were on too small a scale to find ship's position.

117. *Nina*, of London, foundered off Itapemirim, Espirito, Santo, Brazil, 28th October, 1872. Inquiry held at Rio de Janeiro, before R. Austin, Esq., president, Lieutenant W. S. Tregidgo, R.N., and W. H. Lyons, master mariner. Master exonerated. Ship foundered through stress of weather and leakage. Master used every exertion to take his ship into port.

SHIPPING AND MERCANTILE GAZETTE CORRESPONDENCE.

(Reprinted by special arrangement with Sir WILLIAM MITCHELL.)

MARINE INSURANCE CALLS.—DECK LOAD.—In an action brought by the plaintiff, as Secretary to the Mutal Marine Insurance Association and Mutual Marine Freight and Outfit Association, to recover the sum of £10 7s., the amount of two calls made upon the defendant as member of the above Associations. The defendant who admitted his primary liability to pay the above calls, contended that the plaintiff, as Secretary of the Associations, was indebted to him in the sum of £70, which the Company had kept back in respect of the total loss of defendant's ship *Morning Star*. By the policies it appeared that according to the rules of the associations a deduction of 10 per cent. was to be made from the amount payable in respect of any accident happening to a vessel which sailed from a port in North America after the 1st of September in any year with a deckload. It appeared that the *Morning Star* left Quebec on October 17th, 1870, loaded with timber, and that in order to properly stow the cargo, 500 deals were procured and used for stowage, of these some 120, 12 feet deals, 11 inches by 3, were left unused, which came home stowed on a small portion of the deck just in front of the poop. It was proved that a deckload for the *Morning Star* would be 1,500 or 2,000 deals; also that the captain received 3d. per load extra freight for not carrying a deckload. The plaintiff contended that this quantity of deals was a deckload within the meaning of the rule. It was urged by the defendant that it was in no sense a deckload, and certainly not in a vessel of the size of the *Morning Star*, 144 feet long by 28 feet beam, and in support of his allegation called Mr. W. Strang, the eminent timber merchant and shipper, and several other captains and owners connected with the trade, who said with such a quantity of deals was not a deckload, and that the deals were quite distinct from the timber which formed the cargo. The plaintiff called several underwriters and managers of companies, who contended that anything on deck was a deckload. Verdict found for the defendant.—(Lord Mayor's Court, November 27, 1872.)

BILLS OF LADING.—1st. Is a captain justified in refusing signing bills of lading, when merchants object to certify captain's plain copy? 2nd. How shall a shipmaster act to compel a merchant to certify such a copy? 3rd. Can a merchant compel a captain to be satisfied with a plain copy of bill of lading, without his signature, that it is a correct copy of the stamped original one in his possession?—There is no law to compel the giving the master of a ship a stamped bill of lading, or even a copy of the same. All he requires is to have the bill of lading, which he signs as a receipt for the goods, given up and endorsed when

the cargo is claimed. It is the practice, though one not universally followed, to give the master one of the stamped bills of lading, in order that he may understand its stipulations, and be bound by the conditions therein. A certified office copy will serve the same purpose. 1st. A master must not sign any bill of lading, by whomsoever presented, which does not bear an impressed sixpenny stamp. 2nd. It is not necessary to compel a merchant to certify to an unstamped copy. Any two persons may compare the original with the copy, and sign an attestation at the foot, with the date, that it is a true copy. 3rd. If a captain will not take a certified copy, which he has not the means of comparing with the original, if he desire to do so, the merchant cannot, by law, insist upon the acceptance of the copy, and the ship may sail without one. If, however, the original stamped bill of lading is lost, some trouble might be incurred in gaining possession of the goods in the absence of the document containing the master's signature.

Transfer of Share and Freight.—A vessel arrives at a Scotch port from abroad, with a cargo of timber, and during the discharge one of the owners sells his share by bill of sale to another a week before completion of discharge, when freight becomes due. There being no special agreement, who is entitled to receive credit for the share of the freight—the party who sold his interest, or the party who purchased it? The crew were not discharged before the shipping master till a week after the transfer. The Charter was the usual charter for a timber cargo from the Baltic.—The goods having been carried, the freight had been earned, and was, therefore, due on delivery. Under these circumstances the share of the freight belongs to the seller, unless there was a stipulation by which it should pass to the purchaser.

Timber Cargo.—A vessel discharged at Swansea a cargo of spruce deals from Miramichi. According to charter the freight is to be paid as follows:—"Deals and battens, per St. Petersburg standard hundred, 75s.; deal ends, per St. Petersburg standard hundred, 50s." The owner called upon the merchant to-day to settle the freight, and claimed full freight upon all lengths, nine feet and upwards, and two-thirds freight for the lengths under nine feet, which he understands to be the lengths settled by law as deal ends. The merchant objected to settle, contending that nine feet lengths are counted deal ends. Is the merchant right?—Deal ends or battens, per St. Petersburg standard, include all pieces eight feet and under; and, where no special agreement is made, no greater lengths can be insisted upon.

Liability for Short Shipment.—I chartered my vessel to load a cargo of coal for a French port with the following clauses in my charter:—"Master to sign bills of lading as presented to him, without prejudice to the tenor of this charter-party. 2nd. It is further agreed that the

charter being concluded by —— for another party, the liability of the former ceases as soon as they have shipped the cargo." After I finished loading, bills of lading were presented to me for 80 tons, which I signed, not, however, without protesting against same. On arrival in France the cargo turned out 75½ tons only, the consignee deducting the value of the same from my freight. On my applying to the charterers for recovery of same, they excuse themselves by the above clauses, and refer me to the consignee. How am I to act to recover the amount deducted from my freight? And, further, I shall be glad to know also whether, after signing a charter with the above clauses stated therein, I can, if not satisfied with the weight on board my ship, legally refuse to sign charterer's bills of lading? And would a set furnished by myself, with weight unknown, and my signature attached, be a sufficient receipt for the cargo?—The whole cargo not having been shipped, the agent here is liable under the charter, notwithstanding the cause of exemption quoted by our correspondent. The contract was not fulfilled. If a shipmaster has no means of ascertaining weight or quantity, he cannot be compelled to sign for the same, and the detention of the ship, by such refusal, is at the charterer's liability.

Regular Turn.—I chartered my vessel at Newry to proceed to Troon, and there load a cargo of coal, the charter-party mentioning regular turn for loading. When turn arrived I went to see my shipper, and asked him when he could load my vessel, and his reply was, "I am not to load your vessel at all; I received a note from your charterer not to load your vessel, which I will act on." On hearing this I wired my broker in Newry, and requested him to see charterer, which he acted on, and replied that my charterer would proceed to load when the ship's turn arrived. Then I protested against this detention at Troon, and my notary sent a letter to the shipper, and another to the charterer, which he never answered, but shipper did, and said my vessel would be loaded on a certain date, only for a letter he received from the charterer not to load her; and further says, "annexed is a copy of letter received, which I hold in my possession." I believe my charterer was absent for a few days, and when he returned he found a few letters and telegrams respecting the loading of my vessel. Then he sent orders to load at once, which was done, and I received the cargo chartered for, but was seven days waiting for same from the time I would be loaded until I was loaded according to shipper's letter, which I hold. When I arrived at port of discharge I discharged the cargo, after seeing bill of lading, and wanted freight, ton by ton, as per charter, which I received. Now, my charter gives me a lien on cargo for freight, dead freight, and demurrage; and, according to that clause, can I hold as much cargo on board as will pay my seven days' demurrage at Troon, when my charterer disputes my

claim for demurrage, and will not pay any? And, at same time, can I sell the portion retained by public auction on board or on shore, giving charterer a previous notice of my intentions and demands?—The charter stipulating for regular turn, and the ship not having been loaded in turn, the shipowner is entitled to demurrage for any detention thereby caused; and if a lien is given on the cargo for demurrage, the cargo may be held a reasonable time for payment, and sold either on board the vessel or on shore.

HYDROGRAPHIC.

Archipelago.—Coast of Roumelia.

The following information relating to Dédé Agatch or Dédé Agh, in Enos bay, on the coast of Roumelia, has been received from Commander William J. L. Wharton, R.N., of H.M. Surveying Vessel *Shearwater*, 1872.

Dédé Agatch or Dédé Agh is the southern terminus of one of the lines belonging to the system of Roumelian railways.

This line is now completed to Adrianople and Philippopoli, and is to be extended to a point on the river Danube some few miles below Belgrade, where it will join the Austrian railways.

The Roumelian Railway Company hope to have the carriage of all the wheat of the rich provinces through which the line passes, and which now goes partly down the Maritza, in barges, to Enos, partly by the Danube, and partly to Rodosto on the Marmara. The line was opened on August 20th last.

Dédé Agatch is situated in lat. 40° 50′ 05″ N., and long. 25° 55′ 06″ E., on the coast of Roumelia, 9 miles to the north-west of the mouth of the Maritza or Enos Lagoon, and 1½ miles east of the red cliffs marked in the chart of the Archipelago. The small river Podomar discharges itself at the east end of the town.

The town stands on low ground covered with trees to the westward and clear of the marshy ground environing the mouth of the Maritza, but apparently is not far enough, as it has been up to the present time most unhealthy, fever and ague of a bad type having been prevalent. It consists at present (November, 1872) solely of the station and the railway buildings, and the houses and huts of the officials and workmen.

Proposed Harbour.—The Turkish Government have guaranteed the money to make an artificial harbour, which it is estimated will cost about £700,000, but no plan is yet decided on. Until this design is accomplished the shipping or discharge of cargo will always be a matter of time and difficulty.

A small craft harbour, with 7 feet inside, has been constructed this year, where the lighters and large caiques find shelter; this has not as yet stood any winter gale.

Harbour Light.—A red light will shortly be exhibited when the Austrian Lloyd steamer is expected, which is once a week.

Water is only procured from wells in summer, and is not good; no facilities for watering a ship exist.

In winter, the Podomar has an ample supply, but it is very muddy.

The Coast is low, running east and west, with a sandy beach, and a mountain ridge at a distance of about 2 miles. The ridge runs at an angle to the coast, joining it at Makri, 7¼ miles to the west. At a little distance the ridge appears to slope to the sea at Dédé Agh, the flat land between not being visible.

Anchorage.—The best anchorage off Dédé Agatch, is in 4½ fathoms, mud from half to one mile from the shore. The water shoals gradually from 10 fathoms at 8 miles distance, to 8 fathoms at a quarter of a mile from the shore.

The point immediately to the west of the town has a little shoal water stretching off for half a mile, otherwise a ship may anchor anywhere. A vessel intending to anchor close in shore, should not bring the boat harbour to the east of N.N.E. when standing in.

There is no protection from the south-west winds, which occasionally blow with great violence, and cause a heavy sea. The fact of a current generally setting along the coast, will cause a ship to swing broadside to the sea, and to roll heavily; vessels have usually put to sea in consequence.

Dangers.—Vessels bound for Dédé Agatch, and passing to the eastward of Imbros and Samothraki have two dangers to avoid; the Zurafa rock, an isolated head 6 miles to the east of the latter island, and a shoal patch to the north-west of Cape Gremea on the main, at the entrance to the Gulph of Xeros. Several steamers have this year got on the patch off Cape Gremea, by keeping so far over to clear the Zurafa rock as to pass too close along the shore to the south of Enos.

After passing the latitude of the Zurafa rock therefore, a wide berth of at least 2½ miles should be given to cape Gremea (which makes as low yellowish cliffs), and also to all the coast beyond, up to Dédé Agatch.

On this course Enos is passed, a town of about 8,000 inhabitants, standing on the side of a low hill, facing the sea (though it is inside and on the lagoon), and remarkable by its old citadel and walls. When abreast of Enos, the red cliffs marked in the chart come in sight, and make a good mark to steer for until the houses of Dédé Agatch are seen.

Samothraki.—Vessels passing to the west of Samothraki must beware of its low north-west point, as although the island is the highest in the

Archipelago, that end of it stretches out almost level with the sea for a mile and a half.

At night too much caution cannot be observed, as the proximity of the high land renders any judgment of distance doubtful.

Royal Navy and Royal Naval Reserve.

Abbreviations.—Ad., Admiral; A., Assistant; C., Captain; Cr., Commander; C., Chief; Cl., Clerk Cn., Chaplain; D., Deputy; E., Engineer; F., Fleets; H., Hospitals; I., Inspector; L., Lieutenant; M., Midshipman; N., Navigating; P., Paymaster; *r.*, Retired; S. L., Sub-Lieutenant; Sn., Surgeon; St., Staff; N. Inst., Naval Instructor; 1st Class A. E., 1st Class Assistant Engineer; 2nd Class A. E., 2nd Class Assistant Engineer; N. Ct., Naval Cadet; R. N. R., Royal Naval Reserve.

Promotions.—**St. C.**—Edward C. T. Youel, 1865. **St. Cr.**—John J. A. Gravenor, 1861; Edward Moarilyan, 1858; John H. Ellis, 1862. **L.**—Cecil F. Oldham, 1872; Thomas C. Heathcote, 1868; Henry M. C. Festing, 1868; Frederick Hatchinson, 1868; James M. Bance, 1868; John Phillips, 1868; Archibald O. Hill, 1868; William H. Pigott, 1868; Edward H. Arden, 1868; Henry Crawford, 1868; Arthur H. O. P. Lowe, 1868; Ralston C. Bloomfield, 1868; Clifton Lewes, 1868; Robert D. B. Brace, 1868; Edward C. Moore, 1868; Richard W. Fawker, 1868; Alexander Baring, 1868; Edward B. Brietzcke, 1868; Henry B. C. Wynyard, 1868; Henry L. F. Roybe, 1868; Thomas A. Hamilton, 1868; Daniel Mc N. Riddell, 1868; John N. Nugent, 1868; William H. G. Goodlake, 1868; William H. C. Chamberlaine, 1868; Robert P. Machonochie, 1869; Walter S. Goodridge, 1869; Francis E. Ramsden, 1869; George O'Connor, 1869; Cyril Corbett, 1869; Jasper E. T. Nicholls, 1869; Erasmus A. Ommanney, 1869; John W. B. Reeve, 1869; George Neville, 1869; Robert Hoggan, 1871; Henry J. May, 1872; Charles W. Dickinson, 1868. **St. Sn.**—William G. J. Ayre, 1860. **Sn.**—Thomas H. Knott, 1867.

Appointments.—**C.**—Frank T. Thomson, 1868, to Royal Naval College, Greenwich. **Cr.**—John Liddell, 1863, to *Swallow;* William R. Boulton, 1866, to *Kestrel;* Cuthbert R. Buckle, 1869, to *Frolic;* Robert H. Thompson, 1868, to *Valiant*, for coastguard; Stanhope Grove, 1868, to *Achilles;* Joshua R. Palmer, 1869, to *Valiant*, for coastguard. **St. Cr.**—James Kiddle, 1867, to *Salamander*, in command; Richard C. Dyer, 1867, to *Audacious;* George A. Macfarlane, 1868, to *Pembroke*, for *Duncan*. **L.**—James Evans, 1868, to *Excellent;* William M. Carey, 1867, to *Achilles;* Henry C. Wallis, 1866, to *Aboukir;* Albert J. O. Rorke, 1866, and George P. C. Gray, 1869, to *Danae;* Frederic V. Isaac, 1871, to *Orontes;* James F. Baker, 1862, to *Asia;* Edward G. Elwes, 1871, to *Tamar;* Henry P. T. Skinner, 1861, and Alfred C. Carew, 1870, to *Serapis;* James C. C. Dennis, 1867, to *Aurora;* Edward S. Evans, 1866, to *Achilles;* Lionel Fanshawe, 1869, to *Racoon;* Rowland M. Sperling,

1861, Charles E. Read, 1863, and Ernest N. Rolfe, 1871, to *Devastation;* John E. Greenhow, 1866, to *Tamar;* Frank E. Hudson, 1867, to *Reindeer;* Charles R. C. Hamilton, 1865, to *Jumna;* Francis Powell, 1872, and Herbert C. Sayce, 1872, to *Cambridge;* Richard H. Byron, 1866, Lenox Napier, 1868, Edmund B. Wallace, 1872, and John H. Henderson, 1872, to *Excellent;* Edward Wickham, 1873, to *Asia;* Charles E. Bell, 1870, to *Frolic;* Henry C. Walker, 1864, to *Dædalus;* Robert H. Paul, 1866, to *St. Vincent;* Charles Gardner, 1872, to *Kestrel;* Frederic R. Carr, 1866, to *Excellent;* Francis R. B. Kemp, 1867, to *Glasgow;* Francis H. Chapman, 1866, to *Asia;* Alexander G. M'Kechnie, 1864, to *Minotaur.* **N. L.**—Benjamin S. Bradley, 1868, to *Racoon;* Henry E. Wood, 1870, to *Sirius;* Robert Towers, 1867, to *Vigilant;* William H. Adlam, 1864, to *Indus*, for *Simoon.* **S. L.**—Edwin J. P. Gailway, and William H. Goodlake, to *Favourite;* Charles Windham, to *Royal Adelaide*, supernumerary; Alfred A. Taylor, Francis T. Brooke, and William C. Forrest, to *Valorous;* Richard Keown, to *Duke of Wellington;* Charles J. Reddie, to *Favourite;* Charles W. P. Bouverie, to *Frolic;* James S. Muggridge, to *Kestrel;* Ernest G. Rason, to *Seagull;* Frederic L. Lawrence, to *Favourite;* Walton Drake, to *Aurora;* Henry D. Barry, James St. C. Bower, Gerald R. Maltby, Francis D. S. Scott, Tom B. Ficklin, Francis G. Oliver, and George E. Coke, to *Devastation;* Castel Sherard, and Barton R. Bradford, to *Aurora;* Francis S. Jackson, to *Glasgow;* Gilbert E. Harrison, to *Iron Duke.* **N. S. L.**—Henry Grey, to *Kestrel;* Francis A. Symes, to *Frolic.* **M.**—Herbert W. Savory; to *Duke of Wellington;* James H. C. East, and Henry N. Thomson, to *Aurora;* Charles E. Hogg, to *Clio;* Charles E. Baxter, to *Endymion*, supernumerary; Alexander E. Bethell, to *Immortalité.* **N. Ct.**—Philip E. Fisher, to *Narcissus;* Arthur K. Moore, to *Aurora;* Egerton B. Cleeve, to *Immortalité;* Harry Rivers, to *Endymion;* Ernest L. Austen, to *Doris;* Edmund W. Yorke, Edward H. Blair, Robert J. Kidd, and Robert G. Fraser, to *Royal Alfred.* **C. E.**—William Austin, 1859, to *Jumna;* Patrick G. Lambert, to *Indus*, for *Lord Clyde;* James Harwood, 1857, to *Asia*, for steam reserve; William Gill, 1859, William F. Capps, and John H. Treliving, to *Indus*, for steam reserve; John Snell, 1864, to *Pembroke*, for steam reserve; Samuel T. Singer, 1860, to *Tamar;* Thomas Crossman, 1872, to *Daphne.* **E.**—John W. Nott, 1862, to *Fire Queen;* John M. Watson, 1869, to *Glasgow*, additional; Charles Allsop, 1869, to *Frolic;* Henry M. G. Pellew, 1871, to *Kestrel;* John Watson, to *Favourite.* **A. E. 2nd Class.**—John Gardner, 1871, and Henry Moon, 1871, to *Glasgow*, additional; William Walker, *b.*, acting, 1871, to *Frolic;* Benjamin J. Brown, acting, 1872, to *Kestrel.* **Cn.**—Rev. Henry W. Jackson, 1858, to *Asia;* Rev. William A. Rutherford, D.D., 1864, to *Pallas.* **N. Inst.**—A. W.

Schrœder, 1868, to *Pembroke*, for temporary service. **Sn.**—George A. Campbell, 1872, to *Black Prince*. **A. Sn.**—Charles Davison, M.B., 1871, to *Kestrel*; John Allen, 1864, to *Frolic*. **A. P.**—Charles de B. Stewart, 1869, to *Aboukir*; Alfred H. Sherris, 1869, to *Hector*.

Retirements.—**St. C.**—Thomas C. Pullen, 1867, as Captain. **Cr.**—Robert H. Thompson, 1868; William A. Smyth, 1863, as captain. **St. Cr.**—Charles R. B. Forbes, 1863, as Captain. **L.**—Right Hon. Clarence E. Lord Graves, 1869; William P. Barrow, 1860, as Commander; William C. Haynes, 1870. **S. L.**—Arthur W. Brabazon, 1869. **St. Sn.**—William B. Dalby, 1870. **Sn.**—James R. Anderson, 1863. **A. P.**—Robert J. H. Tucker, 1861; Frederic H. Page, 1866; David J. Low, 1866; Daniel C. Stephens, 1869.

Deaths.—**Ad.**—Sir Frederic T. Mitchell, K.C.B., 1866, *r.* **C.**—Cecil W. Buckley, K.C., K.L.H., 1862; Henry W. Comber, 1869, *r.*; James Stirling, *b.*, 1851, *r.*; Josiah Thompson, 1861, *r.* **Cr.**—John C. Tucker, 1866. **L.**—Alexander R. Kerr, 1865. **A. Sn.**—John G. Sparke, M.D., 1806, *r.*

Nicaraguan Coasting Trade.—The Board of Trade have received from the Secretary of State for Foreign Affairs a copy of a note addressed to Her Majesty's Chargé d'Affaires at Guatemala, by the Foreign Minister of Nicaragua, recognising the right of British subjects, under the provisions of the 2nd Article of the Anglo-Nicaraguan Treaty of Commerce of 1860, to the privileges of the coasting trade of the Republic, conceded to Italian subjects by the treaty between Nicaragua and Italy, of Dec. 20, 1871.

Tithes of the Province of Angola.—The Board of Trade have received from the Secretary of State for Foreign Affairs a copy of a decree of the Portuguese Government, dated the 16th ult., abolishing the district tithes, ferry taxes, and fish tithes, hitherto levied in the province of Angola, and substituting a tax of one per cent., *ad valorem*, on all goods and merchandise imparted into, or exported from, the Custom Houses of Loanda, Benguellai and Mossamedes. This decree will only come into operation on and after the date of its publication in the official journal of the province of Angola.

Swiss Duty on Beer.—The Board of Trade have received from the Secretary of State for Foreign Affairs amended copies of the Swiss Commercial Tariff for 1873, from which it appears that henceforth the Federal Customs duty on beer will be assessed according to the gross weight of the vessels in which it is imported, and that any verification of the weight which may be necessary will be made at the expense of the importer.

MONTHLY ABSTRACT OF NAUTICAL NOTICES.

No.	Place.	Subject.
20	South America—Chili—Conception Bay	Dangers off Loberia and Huily Heads.
21	Bermuda—Narrows Channel	Coral Heads near.
22	Brazil—Olinda Point	Establishment of a Light.
23	New Zealand—Middle Island—Cape Farewell and Rocks Point	Discovery of a Danger between.
24	New Zealand—North Island—Wanganui River	Establishment of a Light.
25	China—Chinchu Harbour and Port Matheson	Discovery of a Rock between.
26	Mediterranean—Italy—Galipoli Harbour	Establishment of a Light.
27	Mediterranean—Italy—Port of Naples	Alteration in Light.
28	Adriatic—Lissa—Port S. Giorgio—Hoste Island	Establishment of a Light.
29	Adriatic—Brindisi	Establishment of a Leading Light.
30	Adriatic—Cotrone	Alteration in Harbour Light.
31	South America—Guayaquil River—Amortajada Island	Establishment of a New Light.
32	Ceylon—Great Bassas Rock	Exhibition of the Light.
33	St. Lawrence Gulf—New Brunswick—Shippegan Gully	Establishment of a Light.
34	St. Lawrence Gulf—New Brunswick—Tracadie Gully	Establishment of a Light.
35	St. Lawrence Gulf—St. Paul Island	Establishment of Fog Signal.
36	Lake Superior—Michipicoten Island	Establishment of a Light.
37	Lake Superior—Michipicoten Island—Quebec Harbour	Establishment of a Light.
38	United States—New York—Sandy Hook Light Vessel	Alteration in Lights.
39	Korean Archipelago—Quelpart Island	Danger South of.
40	Uraguay—River Plate Entrance—Santa Maria Cape	Establishment of Provisional Light.
41	Norway, South Coast—Lister Fiord	Alteration in Lister Light.
42	Baltic—Gottland—Narsholmen	Exhibition of the Light.
43	North Sea—Elbe River—Pakensand and Esch	Establishment of Beacon Lights.
44	Ireland, East Coast—Lough Carlingford	Alteration in Lights.

NAUTICAL NOTICES.

20.—South America.—*Chili.*—*Conception Bay.*—Information has been received of the following sunken dangers off Loberia and Huily heads, east side of the entrance of the bay, viz.:—

Off Loberia Head.—A pinnacle rock (*Lozzi rock*) with about 10 feet on it at low water, and 20 to 22 fathoms around; it lies W.S.W., nearly half a mile from the south point of Loberia head. The sea was observed to break over it in bad weather, but under ordinary conditions of swell, it is not discernable and therefore dangerous.

Off Huily Head.—A detached rock (*Zealous rock*) nearly awash at low water, with 4 fathoms between it and the shore, and 5 fathoms at a distance of 2 cables outside. This danger lies S. by W. 4 cables from Huily head, and W. ¼ S. 1 mile from the south point of Morro del Tome. A buoy is to be placed on this danger.

Note.—On account of these sunken dangers, vessels should keep at least a mile from the shore when navigating between Loberia head and Morro del Tome. There is now no perch on the Choros bank. The Belen bank buoy has been removed from the south extreme of the shoal to the centre, and is now moored in two fathoms.

21.—Bermuda.—*Narrows Channel.*—H.M. ship *Ariadne* touched on a shoal patch of coral rock between the Fairway and inner chequered buoy of the channel of the Narrows, Bermuda. The patch, at the time of the ship touching, had 22 feet water on it; but it has been deepened by blasting to 24 feet at low water. From the shoal the Fairway buoy bears N.W. ¼ W., 4 cables, and the inner chequered buoy E. by S. ¼ S., 3¼ cables. As the shoal ground renders this part of the channel very intricate for vessels of heavy draught, and as it is possible that more heads of a similar nature may exist, caution is necessary.

22.—Brazil.—*Olinda Point.*—An *intermittent* white light is now exhibited from the old fort of Montenegro on the point which should be seen 10 miles. Position, lat. 8° 0′ 50″ S., long. 34° 50′ 30″ W.

Note.—The Picao (Recife) light which is 3 miles S.E. by S. from Olinda point, is a revolving light, attaining its greatest brilliancy every minute, but showing twice white and once red, with eclipses of five seconds. This alternation of colour distinguishes it from the Olinda light. Olinda point should not be approached within 3 miles to be clear of the Olinda shoals.

23.—New Zealand.—*Middle Island.*—*Cape Farewell and Rocks Point.*—Information has been received at the Admiralty of the existence of a sunken danger lying 8 miles from the shore off the north-west coast of the Middle island of New Zealand, and nearly mid-distance between Cape Farewell and Rocks point. This danger (*Stewart breakers*) was observed shortly after a gale from the S.W., and was then breaking heavily; bearings were taken near the breakers which places the danger approximately in lat. 40° 39′ S., and long. 172° 13′ E. From this position the breakers extended S.W. about 2¼ miles. It is also reported that the master of a schooner in searching for the danger, obtained a cast of 8 fathoms near the position assigned.

24.—New Zealand.—*North Island.*—*Wanganui River.*—A *fixed* white light is exhibited from the flagstaff on the Castle Cliff (North head) of the river. It is 65 feet above high water, and should be seen 18 miles. Position, lat. 39° 57′ S., long. 175° 1′ E.

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21.—Bermuda.—*Narrows Channel.*—H.M. ship *Ariadne* touched on a shoal patch of coral rock between the Fairway and inner chequered buoy of the channel of the Narrows, Bermuda. The patch, at the time of the ship touching, had 22 feet water on it; but it has been deepened by blasting to 24 feet at low water. From the shoal the Fairway buoy bears N.W. ¼ W., 4 cables, and the inner chequered buoy E. by S. ¼ S., 3¼ cables. As the shoal ground renders this part of the channel very intricate for vessels of heavy draught, and as it is possible that more heads of a similar nature may exist, caution is necessary.

22.—Brazil.—*Olinda Point.*—An *intermittent* white light is now exhibited from the old fort of Montenegro on the point which should be seen 10 miles. Position, lat. 8° 0′ 50″ S., long. 34° 50′ 30″ W.

Note.—The Picao (Recife) light which is 3 miles S.E. by S. from Olinda point, is a revolving light, attaining its greatest brilliancy every minute, but showing twice white and once red, with eclipses of five seconds. This alternation of colour distinguishes it from the Olinda light. Olinda point should not be approached within 8 miles to be clear of the Olinda shoals.

23.—New Zealand.—*Middle Island.*—*Cape Farewell and Rocks Point.*—Information has been received at the Admiralty of the existence of a sunken danger lying 8 miles from the shore off the north-west coast of the Middle island of New Zealand, and nearly mid-distance between Cape Farewell and Rocks point. This danger (*Stewart breakers*) was observed shortly after a gale from the S.W., and was then breaking heavily; bearings were taken near the breakers which places the danger approximately in lat. 40° 39′ S., and long. 172° 13′ E. From this position the breakers extended S.W. about 2¼ miles. It is also reported that the master of a schooner in searching for the danger, obtained a cast of 8 fathoms near the position assigned.

24.—New Zealand.—*North Island.*—*Wanganui River.*—A *fixed* white light is exhibited from the flagstaff on the Castle Cliff (North head) of the river. It is 65 feet above high water, and should be seen 18 miles. Position, lat. 39° 57′ S., long. 175° 1′ E.

25.—China.—*Chinchu Harbour and Port Matheson.*—H.M. ship *Juno* struck on a rock when standing for an anchorage in Tongbu bay, between Chinchu harbour and Port Matheson. The rock (*Juno rock*) appeared to be a cluster of coral heads, with 12 feet at low water and 6 fathoms around. From the rock, bearings were taken, which places the danger in lat. 24° 51′ N., long. 118° 53′ E.

26.—Mediterranean.—*Italy.—Galipoli Harbour.*—A *fixed red* light is now exhibited from the extremity of the mole, recently completed; it is elevated 21 feet above the sea, and should be seen 2 miles.

Note.—Vessels entering the port should keep to the north-eastward of the light.

27.—Mediterranean.—*Italy.—Naples.*—In consequence of the fall of the lighthouse on the extremity of the new mole, a lighter has been temporarily placed at the same position, from which two lights are exhibited, vertically; the upper a *white* light, and the lower a *red* light; they are elevated about 26 feet, and should be seen 2 miles.

28.—Adriatic.—*Lissa.—Port S. Giorgio.—Hoste Island.*—A *fixed red* light of the sixth order is now exhibited on the island, it is elevated 72 feet above the sea, and should be seen 5 miles. The tower, built of white stone, is 30 feet high, and is attached to the keeper's dwelling. Position, lat. 43° 4′ 30″ N., long. 16° 12′ 15″ E.

29.—Adriatic.—*Brindisi.*—A *fixed red* light is exhibited from the minaret tower standing on the quay of the town, to guide vessels mid-channel between the outer and the inner harbours.

30.—Adriatic.—*Cotrone.*—The colour of the light has been changed from white to *red*, to distinguish it from the lights of the town.

31.—South America.—*Guayaquil River.—Amortajada or Santa Clara Island.*—A new *fixed and flashing* white light, showing a *flash* of *four seconds* duration, *every half minute*, of the third order, is now exhibited; it is elevated 256 feet above the level of the sea, and should be seen 24 miles. The tower is white, and stands on the summit of the island. Position, lat. 3° 10′ 45″ S., long. 80° 24′ 30″ W.

32.—Ceylon.—*Great Bassas Rock.*—The lighthouse which has been or some time past in course of erection on the rock, being now nearly completed, it is intended to exhibit the light therefrom on the 15th day of March, 1873. The light will be a *revolving red* light, of the first order, attaining its greatest brilliancy *every forty-five seconds*, elevated 110 feet above the sea, and will be seen 16 miles. In thick or foggy weather a bell will be sounded at intervals of *seven and a half seconds*. On the exhibition of the light from the lighthouse, the light now exhibited from the light-vessel 1 mile N.N.E. of the rocks, will be discontinued.

33.—St. Lawrence Gulf.—*New Brunswick.—Shippegan Gully.*—A light is now exhibited on the point of the Sand bar, east side of the

southern entrance of the gully. The light is a *fixed* white light, elevated 32 feet above high water, and should be seen 11 miles. The tower is 20 feet high and painted white. Position, lat. 47° 43′ N., long. 64° 39½′ W.

34.—St. Lawrence Gulf.—*New Brunswick.—Tracadie Gully.*—A light is now exhibited on the north side of the south gully. The light is a *fixed* white light, elevated 39 feet above high water, and should be seen 12 miles. The tower is 20 feet high, and painted white. Position, lat. 47° 30′ N., long. 64° 52′ W.

35.—St. Lawrence Gulf.—*St. Paul Island.*—A steam fog-whistle has been established on the south-west side of Atlantic cove, south side of the island, about half a mile from the Humane Establishment. In thick and foggy weather and snow storms the whistle will be sounded *five seconds every minute.* The whistle will probably be heard from a distance of 10 to 15 miles in calm weather, and 8 to 6 miles in stormy weather, or against the wind.

36.—Lake Superior.—*Michipicoten Island.*—A light is now exhibited on the south side of the island, at the east side of Quebec harbour entrance. The light is a *fixed* white light, elevated about 60 feet above the lake, and should be seen 15 miles. The tower is 32 feet high, and painted white. Position, lat. 47° 42′ 15″ N., long. 86° 1′ 30″ W.

37.—Lake Superior.—*Michipicoten Island.—Quebec Harbour.*—A *fixed white* harbour light is exhibited from a wooden tower on Agate island in the harbour; it is 32 feet above the sea, and should be seen 10 miles.

Note.—The light is for guiding vessels into the harbour. The channel is marked by four buoys—viz., two on the east side, painted red; and two on the west side, painted black.

38.—United States.—*New York.—Sandy Hook Light Vessel.*—From the 15th February, 1873, the colour of the lights exhibited from this vessel will be changed from white to *red.*

39.—Korean Archipelago.—*Quelpart Island.*—Information has been received of the existence of a sunken rock off the south part of the island on which the Russian ship *Naboska* was wrecked. The rock (*Naboska rock*) is described as being about 500 feet long, with deep water around; and it does not break except in a heavy sea. The position assigned to it is in lat. 32° 59′ N., long. 126° 13′ E., which would place the danger 13 miles from the main land of Quelpart island, and bearing nearly south from the west end of the island.

40.—Uraguay.—*River Plate Entrance.—Cape Santa Maria.*—A provisional light of the fourth order is exhibited until the first-class light is ready for exhibition. The light is a *fixed* white light, elevated 46 feet

above the sea, and should be seen 8 miles. Position, lat. 34° 40′ 30″ S., long. 54° 9′ 30″ W.

41.—NORWAY.—*Lister Fiord.—Lister Lights.*—In the course of the summer 1878, the following alteration will be made in Lister light, south side of the fiord:—On or about the 1st June the three lights at present exhibited will be discontinued, and in the same or following month one *flashing* light, flashing *every four seconds*, will be exhibited.

42.—BALTIC.—*Gottland.—Närsholmen.*—The light, of which information has been given, is now exhibited; it is a *flashing* light. Position, lat. 57° 18¼′ N., long. 18° 43¼′ E.

43.—NORTH SEA.—*Elbe River.*—White beacon lights are now exhibited on the Pakensand and at Esch; when in line, they indicate the channel between white buoy No. 14 and black buoy No. 22, and are thus seen from the Krautsand light-vessel.

44.—IRELAND.—*Lough Carlingford.*—In consequence of a channel having been dredged through the Bar of Lough Carlingford, the following alteration will be made in the lightage of the Lough on the 28th day of February, 1873:—

Haulbowline Light, as heretofore, with the addition of a small *red* light exhibited from a window in the third storey, and visible between the bearings S.W. ½ S. and S.W. ½ W. This red light is for denoting a turning point in the channel.

Leading Lights.—Two iron pile lighthouses have been erected, bearing from each other N.N.W. ½ W. and S.S.E. ½ E., and 500 yards apart; both will exhibit *fixed* white lights of the eighth order, but obscured to the eastward of N.E. by E. ¾ E. The outer or S.E. light will be elevated 23 feet above high water, and should be seen 5 miles. The lighthouse is erected on the projecting point of the shoal between Soldier and Greencastle points, and bears from Haulbowline lighthouse N. by W. 7⅓ cables, Greenore lighthouse S.E. by E. one and a half miles, and from the shoalest part of the Vidal rock N.E. $1\frac{6}{10}$ cables. The inner or N.W. light will be elevated 40 feet above high water, and should be seen 6 miles. The lighthouse is erected on the west point of the shoal between Soldier and Greencastle points, and bears from the south point of Green island S.E. by E. $3\frac{6}{10}$ cables, Haulbowline lighthouse, N. by W. ½ W. (easterly) 9⅔ cables, and from Greenore lighthouse, S.E. by E. ½ E., $12\frac{6}{10}$ cables. Both lighthouses are painted white. The two lights in line lead through the new cut, in 14 feet water.

Greenore Point Light.—As heretofore, but obscured by new buildings on the pier to the east of the bearing S. ½ E.

Greenore Pier Light.—A *fixed red* light of the eighth order will be exhibited from an iron pillar 33 feet above the sea on the east point of the pier, and N. ½ E. 100 yards from Greenore light; it should be seen

5 miles. This light and Greenore light in line bearing S. ¼ W. leads through the channel between Watson and Stalka rocks. The light is obscured to the eastward of S.S.E.

CHARTS, *&c., Published by the Hydrographic Office, Admiralty, to the end of January,* 1878, *and Sold by the Agent, J. D. Potter,* 31, *Poultry, and* 11, *King Street, Tower Hill.*

No.	Scale.		s.	d.
2875	m = 0·25	Japan—Seto Uchi, or Inland Sea	3	6
108	m = 0·95	England, East Coast—The Wash, Skegness to Blakeney	2	6
454	m = 0·65	Jamaica—Port Morant	0	6

OFFICIAL APPOINTMENTS, PROMOTIONS, &c.

BOARD OF TRADE.—To be Medical Officer and Emigration Surveyor at Liverpool, Dr. Spooner, of Birkenhead; to be Chief Emigration Officer at Liverpool, Captain Mackenzie, R.N.; to be Principal Surveyor for the Liverpool District, Mr. W. C. Taylor; to be Chief Emigration Officer at Glasgow, Mr. Harris; to be Principal Surveyor for the Clyde District, Mr. Robert Murray; Mr. John MacFarlane Gray has also been appointed Principal Examiner of Engineers. Mr. Walter Hannah is promoted from Southampton to Liverpool as Third Surveyor there; and Mr. Williams, Fifth Surveyor of Liverpool, is promoted to be Solo Surveyor at Southampton.

COLONIAL OFFICE.—Richard Southey, Esq., to be Colonial Secretary for the Colony of the Cape of Good Hope, in South Africa; Edward Everard Rushworth, Esq., D.C.L., to be Colonial Secretary for the Island of Jamaica; William Porter, Esq., late Attorney-General for the Colony of the Cape of Good Hope, Adams George Archibald, Esq., late Lieutenant-Governor of the Province of Manitoba, in the Dominion of Canada, and Hewitt Bernard, Esq., Deputy Minister of Justice for the Dominion of Canada, to be Ordinary Members of the Third Class, or Companions of the Most Distinguished Order of St. Michael and St. George.

FOREIGN OFFICE.—As Consul-General in London for the Republic of Bolivia, Don Marmaduke Blake Sampson; as Consul at Liverpool for the United States of America, Mr. Lucas Fairchild; as Consul at Cardiff for His Majesty the King of Spain, Don Enrique Guinard; as Consul at Milford Haven for His Majesty the King of the Belgians, Mr. Thomas Jackson; to be Second Secretary in Her Majesty's Diplomatic Service, Edmund William Cope, Esq., now a Third Secretary; to be Secretary to Her Majesty's Legation at Athens, the Hon. Henry Wode-

house, now a Second Secretary in Her Majesty's Diplomatic Service; to be Her Majesty's Minister Resident and Consul-General to the Republic of Peru, the Hon. William George Stafford Jerningham, now Her Majesty's Chargé d'Affaires and Consul-General to the Republic of Peru; to be Her Majesty's Minister Resident and Consul-General to the Republic of Hayti, Spencer St. John, Esq., now Her Majesty's Chargé d'Affaires and Consul-General to the Republic of Hayti; to be Her Majesty's Minister Resident and Consul-General to the United States of Colombia, Robert Bunch, Esq., now Her Majesty's Chargé d'Affaires and Consul-General to the United States of Colombia; to be Her Majesty's Minister Resident and Consul-General to the Republic of Guatemala, Edwin Corbett, Esq., now Her Majesty's Chargé d'Affaires and Consul-General to the Republic of Guatemala; to be Her Majesty's Minister Resident and Consul-General to the Republic of the Equator, Frederic Hamilton, Esq., now Her Majesty's Chargé d'Affaires and Consul-General to the Republic of the Equator; to be Her Majesty's Minister Resident and Consul-General to the United States of Venezuela, Robert Thomas Charles Middleton, Esq., now Her Majesty's Chargé d'Affaires and Consul-General to the United States of Venezuela; as Consul at Calcutta for His Majesty the Emperor of Austria, Mr. H. Reinhold; as Consul at Yarmouth for His Majesty the King of the Belgians, Mr. Garson Blake; as Consul at Hong Kong for the Republic of Peru, Don Adolfo Eimbek; as Consul at Bassein for the Emperor of Austria, Mr. Rudolph Ziegler; as Consul for Chatham and Newcastle, New Brunswick, for the German Empire, Mr. Alexander Morrison; as Vice-Consul at Sierra Leone for His Majesty the King of Spain, Don Eduardo Verdegay. As Consul at Newcastle, Don William Hardy Parker; as Consul at Cardiff, Don John Bovey; as Consul at Hull, Don William Ward; as Consul at Southampton, Don Gillaume Herbert; as Consul at Aberdeen, Don William Black; as Consul at Glasgow, Don John Alexander; as Consul at Leith, Don Charles Stein; as Consul at Belfast, Don Charles Coner; and as Consul at Limerick, for the Republic of Peru, Don Michael Robert Ryan.

India Office.—To be a Judge of the High Court of Judicature at Bombay, John Philip Green, Esq., Barrister-at-Law.

Whitehall.—To be Chief Charity Commissioner for England and Wales, in the room of the Right Hon. Peter Erle, resigned, James Hill, Esq., formerly Second Charity Commissioner; to be Second Charity Commissioner for England and Wales, in the room of James Hill, Esq., appointed Chief Commissioner, Francis Offley Martin, Esq.; the place of one of the Lords of Session in Scotland to Alexander Burns Shand, Esq. (Sheriff of the counties of Berwick and Haddington), in the room of William Penney, Esq., deceased.

NEW TELEGRAPH STATION.—NORTH GERMANY.—The Board of Trade have received from the Secretary of State for Foreign Affairs notice that a telegraph station has been erected on the Peninsula of Hela, by which shipwrecked seamen thrown on the neighbouring coast will be enabled to communicate promptly with Dantzic.

GUATEMALA IMPORTS.—The Board of Trade have received from the Secretary of State for Foreign Affairs a copy of a notice issued by the Government of Guatemala, on the 18th November last, prohibiting the importation into the Republic of all breech-loading fire-arms, and fulminating powders and cartridge cases for the same.

NEW LIGHT VESSEL ON THE INNER DOWSING SHOAL.—In consequence of the urgent representations of shipowners and masters of vessels trading along the north-east coast, we understand that the Trinity House and Board of Trade have agreed that a light vessel should be placed on the north-east of the Inner Dowsing Shoal, off the coast of Lincolnshire. The sand is about six miles long and one broad, has not more than about six feet on it at low water, and is particularly difficult to distinguish by the chart. To the immense coal trade on that coast the proposed light will be of infinite service. It will undoubtedly save the vessels much risk and delay, and give them a connecting light between the Spurn and the Dudgeon, which will complete an admirable and unbroken chain of lights all along the coast. We understand that Lord Claud Hamilton has been indefatigable in bringing about the desired object, and as the member for King's Lynn we think he deserves the very warmest thanks of his constituents for the great boon he has done so much towards obtaining. The Trinity House now as ever show themselves ready to co-operate in any really deserving project for a new light.

SAFETY VALVES.—The following important communication has been made from the Board of Trade to the various firms connected with the construction or use of marine engines:—"Board of Trade, Whitehall Gardens, 18th December, 1872.—Sir,—1. The Board of Trade have been urged to sanction the use of spring-loaded safety valves on board passenger steamers. 2. They have to a limited extent allowed this, but, as yet, by way of experiment only. In the majority of cases where they have allowed it, they have required one spring-loaded safety valve and one dead weighted or lever safety valve on each boiler; but, in three cases, they have extended the experiment further by allowing two spring safety valves on each boiler, where the arrangement adopted has been previously submitted for approval. 3. Before they extend the use of spring safety valves, they wish to be informed whether, in the opinion of users, as well as of makers of boilers and engines, it is desirable to extend the use of springs, and, if so, whether the accompaying rough draft of a circular contains sufficient precautions to ensure safety. 4. A reply at your

early convenience will oblige.—I am, sir, your obedient servant, Thomas Gray." "*Accompanying rough draft referred to.—Spring Safety Valves.*—The Board of Trade are advised to allow steamers to be fitted with spring safety valves upon the following conditions:—1. That there be two safety valves on each boiler. 2. That the area of each valve shall not be less than a quarter of a square inch to each square foot of fire grate. 3. That these valves shall be so cased in that they cannot be tampered with. 4. That provision be made to prevent the valve flying off in case of the spring breaking, and to apply immediately dead weights or lever and weight. 5. That these valves shall also be cased in in the usual manner of Government valves. 6. That proper lifting gear shall be provided to ease all the valves if necessary when steam is up. 7. That application is made to the Board of Trade in the first instance and before any springs are fitted, stating whose apparatus or arrangement the applicant is desirous of using, and sending a plan to scale. 8. That according to the practice of the Admiralty when using spring valves a supplementary test or alarm safety valve, about one-eighth square inch area loaded with a weight, shall be fixed on the front of the boiler. This valve should be locked up to be out of control when steam is up, but so arranged that any escape of steam will be visible in the engine-room."

Importation of Cattle into Malta.—His Excellency the Governor has been pleased to direct, by a notice dated the 16th of December, that the importation of cattle from the district of Cassandra be prohibited, and that the introduction into these islands of wool, hides, skins, horns, bones, and hoofs from that place shall not be permitted until subjected to the usual sanitary measures, under the direction of the police physician.

Import of Dynamite into France.—The Board of Trade have received from the Secretary of State for Foreign Affairs a copy of a decree of the French Government, dated the 21st ult., prohibiting the importation into France of dynamite of foreign manufacture without the special permission of the Minister of Finance.

Free Imports into Belgium.—The Board of Trade have received from the Secretary of State for Foreign Affairs a copy of a Belgian Law, which came into force on the 15th inst., allowing the free importation into Belgium of cattle, sheep, swine, meat, butter; cereals, including rice, flour, &c.; meats, fish and vegetables preserved otherwise than in spirits, sugar, or vinegar; and common soft and white cheese.

New Chinese Flag.—On the 1st of November a new Imperial flag was adopted by the Chinese Government, and the fact has been notified by the Tsung-li-Yamen to the Ministers Superintendent of Trade and

Foreign Officials. The new flag is of a triangular shape, and made of bunting of a deep yellow colour, with a blue dragon *courant* in the centre. For vessels of 200 feet and under it is to be eight feet long, and for vessels over 200 feet long twelve feet. The new flag is to be borne by all Chinese war vessels and steamers, including those built at the Foochow and Shanghae arsenals and the Customs' cruisers. Its institution will, therefore, have a tendency to centralise the components of the Chinese fleet, and subordinate them directly to the Imperial Government through the Admirals commanding the several stations on the coast. Thus a blow will be aimed at the independence of the provincial governments, and an end put to the *imperium in imperio* of cruisers claiming all the privileges of Government vessels sailing under a private flag and being controlled by the Foreign Customs. It may be looked on as part also of the movement instituted a year or two ago, by which the foreigners in command are gradually being displaced by native officers.

How Sailors are Made.—At one of our Mercantile Marine Offices, during December last, the following incident illustrated the mode in which some of our modern seamen are manufactured, so to speak. A lad of eighteen years of age was brought to be shipped by the master of the *Young Marquis*. As he did not present a sailor-like appearance, he was questioned by one of the officers, when the facts of his case were elicited. He stated his name to be George Gales; that he had been a labourer previously, but, being out of work, he came to seek employment. Being met, on entering the town, by a boarding-house keeper, he was asked if he would like to ship as a sailor. As he was willing to do anything for a livelihood, was taken to a lodging-house, and fitted out with a guernsey, &c., so as to appear "ship-shape, and Bristol fashion." Next day he was put on board a coaster in the Bristol Channel as an "ordinary seamen," at wages, per month, of £2 17s.—receiving, at the same time, an advance note, payable three days after leaving dock, of £3 7s. 6d.—or a month and half's wages. This was given to the ingenious *chaperone*, who supplied him with a "kit," valued afterwards by a competent person, at 12s., which, together with a day's board, would leave his "instructor" a profit of £2 13s. 6d. on the transaction. For this sum he had been informed of the outlines of a seaman's duty, which, he said, consisted in knowing that there were thirty-two points in the compass, and that when the others laid hold of a rope he was to do the same. Of course when he was ordered aloft, his captain found out his "lubberly" education, landed him and stopped his advance.

ORIGINAL PROBLEM.

Communicated by Mr. JOHN WILLIAMS WHITE, Navigation School, Bristol.

BEING in a ship steering East, with the wind 2 points on the port quarter, I saw a red light on my starboard bow, which I found to be a brig close hauled. Give the course she was steering when we met; also, which vessel had to keep away to avoid risk of collision. Find, also, the true course and time the brig will take, at an hourly rate of 6 knots, to reach a position in N. Latitude, whose Meridian distance is one-half of a degree, and 2 h. 33 m. behind mean time Greenwich, supposing we met in N. Latitude, where the Meridian distance is four-fifths of a degree and 44 minutes later than the position she is bound to.

SOLUTION.—The ship going East, with the Wind 2 points on her port quarter, gives the wind at W.N.W., the brig being close hauled, her course was N. when we met; therefore, the ship keeps away, having the wind free, by opening her port light.

(B) (1) $\begin{cases} M = L \text{ Cosine Lat., or Cosine Lat.} = \frac{M}{L} = 10 + \log. 1 - \log. 2 = \\ \text{Cosine } 9{,}698970 = \text{Lat. } 60° \text{ N., and } 2\text{ h. } 33\text{ m. later, gives} \\ \text{Long. } 38° 15' \text{ W.} \end{cases}$

Again:—

(A) (2) $\begin{cases} \text{Cosine Lat.} = \frac{M}{L} = \frac{4}{5} = 10 + \log. 4 - \log. 5 = \\ \text{Cosine } 9{\cdot}903090 = \text{Lat. } 36° 52' 2'' \text{ N., also Long. } 38° 15' \text{ W} + \\ 11° \text{ W.} = \text{Long. } 49° 15' \text{ W.} \end{cases}$

Lat. B = 60° 00′ N.	Mer pts. = 4527	Long. B = 88° 15′ W.
Lat. A = 36° 52·2 N.	2383·2	Long. A = 49° 15′ W.
23° 07·8 N.	M. "diff." Lat. = 2143·8	11° 00′
60		60
T. diff. lat. = 1387·8 N.		diff. long. 660 E.

$$\text{Tang. course} = \frac{\text{diff. long.}}{\text{M. diff. lat.}}$$

diff. long. 660 log. 12·819544
M. diff. lat. 2143·8 log. 3·331184
Tang. $\overline{9{\cdot}488360}$ = True Course N. 17° 06′ 42″ E.

$$\text{Time} = \frac{1452{\cdot}1}{6} = 10{\cdot}08 \text{ days}$$

distance = T. diff. Lat. Secant. Course. − 10.
Course 17° 06′ 42″ Secant. 10·019664
T. diff. lat. 1387·8 log. 3·142327
log. $\overline{13{\cdot}161991}$ = distance 1452·1 miles

True Course N. 17° 06′ 42″ E. Time 10 days 1 hr. 55·2 m.

THE

NAUTICAL MAGAZINE.

NEW SERIES.

MARCH, 1873.

LIFE AND LIFEBOATS.

It would be interesting to know the date and origin of many of the principles still applied to the sailing of ships, and what were the surroundings that first suggested their adoption. Doubtless, many of these principles would be abandoned as very unsuitable to the present state of things, if the cause of their adoption was looked into, for it can be said of some of them what is often said of dress, the fashion is followed without any reference to its origin or fitness.

Sometimes, indeed, more can be said in favour of the latter than of the former. Dress, for example, is constantly changing, consequently there is some chance of sometimes getting a suitable one. And no matter how fantastic the prevailing style may be, ladies at least take care to have a good fit. But with ships it is different: fashions are sometimes applied to them thoroughly worn out, which make them look like the tall boy in the short clothes which he has outgrown.

This applies to the old-fashioned method still in use in putting out lifeboats at sea, and as the subject is an important one it may be worth while enquiring into its value.

A magnificent steamer having just left the builder's hands, with, as it is said, all modern improvements, affords us an opportunity of observing what principles are applied to get out the lifeboats easily and promptly in those emergencies which all ships are liable to meet with.

The arrangements seem perfect. The lifeboats are very fine. All the gear is in its place. They are magnificent boats; their very appearance begets confidence, and they sit in their chocks like ducks on the water, and are supplied with every requisite for immediate use. The massive davits are swung in board, and the tackles are hooked on to the boats ready for hoisting out at a moment's notice. Everything looks perfect. The builders say everything is perfect. The press echoes the same sentiment, and she is puffed up as a model of naval architecture with every modern and patent appliance.

But all this was as justly said of the ill-fated *Captain*. She also was a model of naval architecture, she not only was said to be magnificent, but she was said also to be terrible. Terrible to an imaginary, not-often-to-be-met-with, enemy. She was even said to be capable of destroying a whole fleet. And yet she proved very ill-adapted to cope with her natural and constant enemies, the elements.

Whether with her toppling tendencies she would ever have proved terrible to the enemy or not, is not at all clear, but one thing is certain, notwithstanding all her perfection, she proved herself on her first brush with her natural foes, very terrible to her friends, five hundred of whom she carried with her most ingloriously to the bottom, and in weather in which one of her own boats lived.

But it is with lifeboats more particularly that we have to do now. Let us therefore limit our observations to them. Up to the point we have already observed everything is perfect. But notice how the boats which are thirty feet in length have to be put out between two davits which are only twenty-four feet apart. This is the generally allowed proportion of space left between davits for such boats, which fashion (and fashion only) has dictated. The feat of getting a thirty-feet boat to pass through a space of twenty-four is performed by a complicated and in heavy weather, by a dangerous and difficult process. The boat, in the first place, has to be hoisted off the chocks, and with the limited number of hands available for the work, this generally has to be done one end at a time. After precious time has been thus wasted, she has to be made to pass through them much on the same doing and undoing principle as the man in the school-boy problem got the fox, the goose, and the corn across the river. First, the boat has to be launched forward until the stern is forced over the side, and the after davit swung out; second, the boat has to be launched aft for the fore end to clear the fore davit, and then the fore end is forced out, and fore davit swung; and, third, the boat has again to be launched forward until the davits are square, the guys secured, and then she is ready for lowering. In fine weather when no hitch occurs this work takes about an average of ten minutes. In bad weather the difficulty of performing the work with safety to the

boat is much greater, and a greater amount of time required. But in cases of great emergency, such as a collision, when every one would be more or less excited, many hitches in the work occur, which lengthen the time, and place life in great jeopardy.

Now, by way of comparison, look at that other steamer discharging her cargo. Observe how rapidly it passes over the side; note the time of each sling being hove up high enough from the hold to the time that it is over. A few seconds only elapse. Now, why cannot lifeboats be put out on the same quick principle? The only reason is, that builders and other gentlemen of fashion-following tendencies will persist in placing the davits as obstructions to the direct passing out of the boats. If the same principle was applied to swinging cargo over the side, when would one of our large steamers be discharged? A nautical eye would be amused if such a thing could be seen as a steamer discharging bales of cotton through side gangways that only admitted the bale to pass out narrow-wise. And a non-nautical eye would be equally amused to see warehouses discharging their contents on the same principle. Fancy a warehouse on fire, and every bale of cotton having to be lifted necessarily by both ends, and put out with davits placed apart only three-fourths the length of the bale. Such an absurdity would not be tolerated a day by anyone who had to pay for the work. In discharging cargo, either from ships or warehouses, the most perfect principles are employed, securing the greatest rapidity of execution, and the most perfect economy of time and labour. For this perfection we are indebted to the fact that time and labour cannot be lost in working out cargo with unadapted principles, without making an impression on someone's pocket. And if the applying of wrong principles to the saving of life made a similar impression, the method now in use would long ago have been abandoned, for impressions that pass through the pocket to the brain seem to sink the deepest and draw from it its best corrective powers.

The present hatchways and gangways, and most of the discharging tackle now on board of our steamers, would be ill-adapted to discharge a cargo of lifeboats. But if a trade in such boats were to spring up, we should see how soon the hatchways and gangways, and every other necessary consideration, would be adapted to the work. Every obstruction to rapid discharging would be quickly removed. Every principle suggested for saving time and labour would be carefully studied and subjected to experiment, and there would be no settling down to any fixed method until something like perfection was obtained; for saving time and labour is saving money; the study of it pays.

How immeasurably little a drowning man must feel who remembers that the lifting of a mere bale of cotton in the world he is leaving, is

more studied than the lifting out of a boat. It is equally humiliating to see the most perfect principles employed in the general management of a ship, and worn out unadapted ones only applied to the interests of life. If we want to launch a *Great Eastern* broadside into a river, somehow or other we find means to do it. But the launching of a lifeboat over the side of a ship, seems as if it were beyond our capabilities, though the latter is infinitely easier than the former.

It would be interesting to know who it was that first introduced the plan of placing the davits a less distance apart than the length of the boat. Doubtless, he must have been a very "Ancient Mariner," indeed. And, doubtless, again, he would be much amused if he could visit this world, and see his plan still adhered to in our large vessels with their boats in chocks, for which he never contemplated its use; for his reasons for so placing them can easily be traced, and their unsuitableness to the present state of things judged.

In the days of small vessels and boats, when the old-fashioned "long-boat" was carried on the deck as a receptacle for all the lumber of the ship, one quarter boat was carried in the davits ready for lowering. It was desirable then as now that the boat could be lowered, hoisted, and secured in the least amount of time. It was not then contemplated that she would be lowered on deck to remain there for long, but she was supposed always to be hanging to the davits, either inboard or out. No griping spar had then been invented, and, as it is necessary to have something to which the boat can be griped, the davits were placed apart, a less distance than the length of the boat, to answer this purpose. The boat being light, could be thus very readily worked. The davits were placed close enough together to admit of griping the gunwale of the boat to each upright; while at the same time they were kept far enough apart to allow the boat to swing inboard freely. The griping of the boat was here, whether she was swung inboard or out, a very simple process, as in either case there were the two firm uprights of the davits to gripe the gunwale to. This is the only reason that ever existed for such placing of davits. The plan owes it origin exclusively to the mere convenience of having something to gripe the boat to.

In process of time, however, vessels and boats grew larger, and, for griping purposes, a spar from davit to davit was adopted. This, at once did away with the necessity of placing the davits as before, yet no alteration took place in the plan. But ships and boats grew larger still, until it became advisable to carry the latter inboard in chocks, and then such placing of davits became simply absurd, as its only object had ceased to exist.

It is much to be wondered at, that this plan should have existed so long, and been so generally used. It matters not what class of ship is

visited, or to what nation she belongs, this glaring absurdity is everywhere found. From the largest down to the smallest vessel, this objectless worn-out fashion seems to reign triumphant over reason and experience, and all the considerations which are due to life, and while progress is unmistakeably marked in our ships as a whole, this one detail stands still, and, strange to say, in spite of all the pressure of the times on everything to "move on."

Lifeboats should be so arranged in their chocks, that to get them over the side there ought to be no necessity for wasting time in hoisting. Whatever method is adopted for putting them out, it ought to be exclusively one of lowering, and instead of requiring all hands to force the boat over, the whole process ought to be one of restraining, and brought within the control of one man. And under no circumstances should the boat and davits be allowed to be altogether cast loose in a seaway, swinging and knocking about when getting over, as is the case now, while hoisting to the davits, and swinging out. It is the case with many ships that have high bulwarks, that the men have to perform this work with the boat above their heads, where, as every one ought to know, all the strength that any man can apply to steady or force her over with a rolling ship, is very insignificant indeed.

The davits ought to be placed apart about six inches more than the length of the boat, to allow her to pass freely between the uprights, and they ought always to be swung out and guys secured permanently when at sea, ready for the immediate use of the davits. The davits being thus placed would alone make the putting out of the boats easier, safer, and quicker, but it is desirable also to dispense with the necessity of hoisting, and this can easily be managed by very simple arrangements.

The davits being thus properly placed, let us suppose we want to put over the side a boat of six feet beam. The davits are swung out and secured, the tackles are hooked on, hauled well taut, and made fast with a hand by each to lower away as soon as the boat is over the side, and the uprights of the davits are far enough apart to allow of the launching of the boat through them freely. The keel in the chocks will in this case be about three feet six inches from the outside of the ship. The head of the davit will be the centre of the arc of a circle which the keel will have to make to pass over the side, the boat having a descent of about a foot in passing over. The outside portion of the boats chocks are so cut that, when knocked from under the boat, they leave this required descent in the remaining portion, and the boat, if loose, will then fly out with her own weight, the tackles naturally carrying her over the side, and one attendant with a guy can restrain her at pleasure.

All that is necessary thus to launch the boat is for the head of the

davit to be of the right height to carry the keel of the boat over the covering board as the boat makes the descent and passes over. This is a question of a foot or two more length of davit only.

This method is as simple as swinging cargo over the side, and if properly fitted will be equally easy. There is no extra cost attached to it, no complicated patents, fit only to be worked by men of the same measure of intelligence as the patentee. This method comes within the range men of the meanest capacity, and is indeed the only natural way to them of performing such work. The most ignorant and excited in circumstances of emergency, without the advantage of drill, would comprehend at a glance what was required to be done, and all the shouting and bawling and confusion consequent on the present state of things, would, to a great extent, be done away with.

DECK LOADS.

A Paper read before the Dominion Board of Trade at Ottawa, January, 1873, by Henry Fry, Esq., President.

"When I state that, during the season of 1872, no less than sixty-two large sailing ships and nine iron steam ships, all engaged in the lumber and grain trades between the St. Lawrence and Great Britian, have been totally lost; that the value of these vessels, their cargoes and freights amounts to over four millions of dollars, and, above all, that over 250 valuable lives have been sacrificed, I have said enough to prove that the subject is one demanding the careful attention of this Board and of the Government of the Dominion. Can the loss of any of these ships be traced to preventible causes, and can anything be done by legislation or otherwise to prevent such a lamentable sacrifice of life and property in the future? These are the two questions I propose briefly to discuss in this paper. It is somewhat remarkable that of the sixty-two sailing ships, only thirteen were wrecked on their outward voyage, no less than forty-nine being homeward bound; whilst of the nine steam ships two were outward-bound and seven homeward. I dismiss the outward bound ships at once, most of them having been lost by ice or fog, and turn to the homeward bound ships, over which our Government can alone exercise control. Of the forty-nine sailing ships, forty-two were laden with wood, six with grain and flour, and one with fish. Primarily, of course, the terrific gales of 8th, 18th, and 28th November will account for the loss of the greater portion of those homeward bound ships, and for the disproportion between the loss of ships on the outward passage as compared with the home-

ward; but a close acquaintance with the North American trade for the past thirty years has convinced me that *fully three-fourths of all the losses of wood laden ships in the North Atlantic, in the fall of the year, may be traced directly or indirectly to the practice of carrying deck loads*, and the facts I have been able to collect with reference to recent losses confirm me in this opinion. Most of the Quebec ships that reached Great Britain last fall were those who either wisely took no deck loads, or lost their deck loads, either in part or the whole, by throwing them overboard when the ship began to leak, or allowing them to be washed overboard; whilst of the forty-two wrecked ships, so far as I have been able to ascertain the facts, *only one left the St. Lawrence without a deck load*, and thirty-five were abandoned in the Atlantic waterlogged. The harrowing details of these wrecks conclusively show how much deck loads contributed to the loss, and the various ways in which they bring about the destruction of ships and their crews. Most of the ships engaged in this trade are necessarily second-class ships, many of them having seen their best days, and some of them not too well found. They are, too, peculiarly unfitted for deck loads from the fact that most old ships are weak in their upper works from decayed iron fastenings, and defective frames and beam arms. As soon, therefore, as a ship begins to roll in a heavy sea, she strains and leaks, and the deck load causes her waterways to open; if the pumps are good *and the crew can stand at them* she may possibly escape; but far more frequently when the pumps are most needed, they are least available; a sea breaks on board; the deck load gets adrift; the sailors get their limbs broken or they are killed by loose logs in trying to get them overboard; or the pumps are broken off at the deck by loose timber washed about, and thus rendered useless; the ship becomes waterlogged, provisions and fresh water are destroyed, and the unhappy crew take to the rigging or the tops, there, alas! too often to perish, amid the horrors of starvation, cold, and delirium. Impressed by these facts the British Legislature, some thirty-three years ago, passed an Act prohibiting all vessels clearing at ports in British North America for ports in the United Kingdom from carrying deck loads after the 1st September or before the 1st May in each year. I venture to say that ninety-nine out of every hundred seamen engaged in the trade hailed the Act as a great boon, and that during its existence it saved the lives of thousands of British seamen. Most unfortunately, as I think, in 1862, by a simple clause in a 'Customs Consolidation Act,' this beneficent law was summarily repealed, and to this day I have never heard any valid reasons given for its repeal. I know that the British Government have a theory that all such interference with trade, all inspection of ships, &c., is unwise, because it throws the responsibility off the shoulders of those who ought to bear it, and casts it upon the

inspectors, and this is true within certain limits; but I deny altogether that it is valid where human life is concerned. Mark how carfully the Government insists on the inspection of emigrant ships before they are allowed to sail, and of all steam ships before they are permitted to carry any passengers. In various ways all civilized governments seek to protect their subjects from the consequences of the wilful carelessness, neglect, or greed of their employers. The only other reason I have ever heard given was that some American shipmasters had evaded the law by first clearing without a deck load at St. John, N.B., and then taking one on board at East-port, it being brought by lighters from St. John. This, however, could have been easily cured by a penalty imposed at the port of discharge. Ask any intelligent seaman what he thinks about deck loads, and he will reply, 'Ships are not built to carry deck loads, and it would be a good thing if they were prohibited by law; but if so-and-so carries one, I must do so, or I shall probably lose my situation.' But some of my commercial friends may say, 'This is not a matter that affects us; it is a matter for the English shipowners and underwriters to settle between themselves, and if you must have an "Act of Parliament," you should go to the Imperial Parliament for it.' Now, this is a very mistaken view of the matter. Who will pay these four millions of dollars lost in 1872? Not the underwriters ultimately, for in the average of years most of them make a profit out of the business and not a loss, and they are but a medium for collecting a tax from the fortunate for the benefit of the unfortunate; not the shipowners, for in most cases they are fully insured; no, the loss will be borne either by the producer or consumer of what we have to export, or what we require to import, in the shape of increased premiums of insurance or rates of freight. It is plain enough that if the value of Canadian wheat or Canadian lumber is regulated by its value in the markets of Great Britain, where they have to compete with the products of other countries, then whatever is paid in increased cost of insurance or freight must come out of the pockets of the producer; and thus every Canadian farmer and every Canadian lumberer is interested in the question. Our fall premiums of insurance do in fact kill a great deal of our fall business, or render it unprofitable. Sir, I do not come here to plead for either shipowners or underwriters; I have no great amount of sympathy with either; the former owe their losses to their own cupidity, and, as I said before, generally protect themselves by insurance; whilst the latter by a single line inserted in their policies could prohibit deck loads altogether. But I plead for this law in the name of humanity, in the name of the thousands of poor sailors who every year flock to our shores, and who are bound by a rigid legal instrument to stick to their ships and do their duty, though death stares them in the face; and who, once

having 'signed articles,' have no right to object to any amount of deck load that may put a few pounds in the shipowner's pocket, although it may, and often does, increase the sailor's risk tenfold. I plead for it in the name of the hundreds of widows and orphans who are deprived of their natural supporters and cast upon the world in poverty and wretchedness for lack of the protection which every sailor has a right to expect in his perilous calling. I trust this board will pass the resolution I have the honour to propose, unanimously, and that the Dominion Government will, during the present session of Parliament, bring in a bill to prohibit all deck loads after the 1st of September, and before the 1st of May. It is necessary that I should say a few words with reference to the seven steam ships which are believed to have been lost this fall. One ran ashore in a fog; another capsized near Sydney, C.B., with the loss of eight lives; a third capsized near St. Paul's with the loss of all her crew save one; the other four have never been heard of, but are believed to have been lost in the same way, and that every soul on board has perished. Neither of these seven boats belonged to our regular lines; all were loaded with grain in bulk, and all were very deeply laden. They were all boats of small power, but large carrying capacity. The grain being in bulk, and loaded very rapidly by elevators, naturally settled at sea, and with a heavy roll it would shift and cause the ship to capsize. This I believe to be the uniform cause of the loss of six out of seven. Now, there is a Port Wardens' Act for Montreal, where these ships were laden, containing excellent provisions for the prevention of such catastrophes, and an excellent officer provided to see them carried out; but, strange to say, the penalty for evading the provisions of the Act is just forty dollars! I believe I am correct in saying that all these boats paid the fine, and refused to obey the port warden's orders, with the result above stated. English underwriters justly complain that no publicity was given to the fact. The remedy would appear very simple; let the Act be so amended as to provide that no grain-laden vessel shall be allowed to clear without producing to the collector a certificate from the port warden that the law has been complied with; or else increase the penalty so as to make it unprofitable to the shipowner, and in this case let the infraction of the law be published so as to give underwriters' agents fair warning. This class of boats is likely to increase in number, and do a large share of the grain business by the St. Lawrence. It is therefore important that the port warden should have the necessary power to protect the lives of the crews and passengers as well as the property of the shippers.

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OUR GREAT PORTS.

Newcastle and the Tyne Ports.

The Metropolis of the North, as the Tynesiders delight to call it, has an ancient history. It is supposed to have been founded by the Emperor Hadrian. He visited Britain in the year 120, and in order to strengthen the Roman Settlement in the country, built a wall extending from the Solway to the Tyne. At short distances fortified camps were placed. These were called "stations," on account of their permanent character. The "second" station was formed at or near where the site of Newcastle now is. It was called Pons Ælii, on account of its vicinity to the bridge which Hadrian built across the Tyne, he being a member of the Ælian family. It was garrisoned by a cohort of the Carnovii, forming a portion of the Sixth Legion, whose head-quarters were at York. Many Roman remains have been found from time to time in the town, notably a statue of Hercules, a figure of Mercury, and numerous specimens of the famous pottery of that period. On the departure of the Romans, the tribes of Scotland invaded the country around, and ruined all that they could. But, during the Saxon period, a town sprang up to the east of the Roman station. It was called Pampedon, and is supposed to be the Pandon of the present day. It is also believed to have been identical with the royal village of Ad Murum, mentioned by Beda as the seat of Oswi, King of Northumberland. Further on a colony of monks settled there, and hence arose the name of Monkchester, by which it was known for some time. In the year 1072, William the First halted there on a return expedition against the Scots. From this circumstance it may be said Newcastle took its rise. For, in order to repel the attacks of the Saxon nobles who had taken refuge further north, the Conqueror directed his son Robert to build a castle, no doubt on the site where the present one now stands. Hence the name of New-Castle. It was probably built of wood, for it soon disappeared. Rufus rebuilt it, and, in order to defend it properly, he granted an incorporation to the community, whereby the "burgesses" were enjoined to hold it against all comers. In order to "raise the wind," he seems, like many other royal personages, to have made free with the property of "Mother Church." The chronicler Hardying remarks, that—

> "He buylded the Newcastell-vpon-Tyne,
> The Scottes to gainstand and to defend,
> And dwel therein: the people to incline
> The town to build and wall as did append,
> He gave them ground and gold ful great to spend,
> To buylde it well and wall it all about,
> And fraunchised them to pay a free rent out.

The rentes and frutes to th' Archbishop porteinyng,
And to the bysshopes of Wynchester and Sarum,
And also of nyne abbeys lyvelod conteynyg,
In his handes seazed and held all and some,
But for his workes and buyldynges held eche crome,
With which he made Westmynstre hall
And the castel of the Newe Castell withall."

Corporate privileges and charters were granted by the Henrys I., II., III., and IV. Under Stephen it was regained by the Scots, and the Scottish monarch often resided there. King John established the Lammas fair which is still continued. For many centuries, up to the merging of the two Crowns of England and Scotland, in the person of James I., Newcastle seems to have been the scene of numerous contentions. It not only had a castle, but was surrounded by a thick wall, and withstood many a siege. The prevailing sentiment of the people appears to have been loyalty to the reigning house. Whether this was owing to the many marks of royal favour bestowed on it, from time to time, it is hard to say. One of the oldest, and, perhaps, the most important charter granted to it, was that of Henry III., who granted it the right of quarrying for coal. This was in 1239, five years after its discovery. The charter recites that the king "By his letters pattents, under the great Seal of England, dated at Westminster, the first of December, in the three and twentieth year of his reign, upon the good men of Newcastle's supplication, thought it fit to give them license to dig coals and stones in the common soil of that town, without the walls thereof, in the place called the Castle-field and the Forth; and from thence to draw and convert them to their own profit, in aid of their said fee-farm rent of a £100 per annum, and the same as often as it should seem good to them; the same to endure during his pleasure." This appears to be the birthright of the coal-trade, for previous to that time it does not appear to be mentioned in history. Subsequently, the trade gradually progressed, for in 1280, the dues amounted to £200—a sum of considerably more value then than now. Coal seems to have made its way to London; but in 1298 and 1306 it was prohibited, on a petition from the nobility and gentry who stigmatised its use as a "public nuisance." This was not altogether a disinterested allegation, for it began then to interfere seriously with the consumption of wood for fuel, great quantities of which then grew aroundthe metropolis, and afforded a considerable item of profit in its sale. Coal seems, however, to have been generally used by brewers, dyers, and other tradesmen in 1358, and in 1381 the prohibition was removed. Since then, the trade of Newcastle in this important item of her traffic has continued to prosper. From £200, the amount of dues in the time of Edward I., to that of Elizabeth, a period of three

centuries, it increased to £10,000. A few statistics will best illustrate this branch of commerce there:—

	Coastwise.	Oversea.
Coal shipped 1791	404,367	45,707 chaldrons.
,, 1811	634,371	18,054 ,,
,, 1826	800,437	62,620 ,,
,, 1836	2,250,000	411,697 tons.
,, 1863	2,128,254	1,935,158 ,,
,, 1872	2,200,290	3,222,735 ,,

The increased transit oversea has been eight-fold in 36 years, but the trade coastwise has remained in *statu quo*. That is owing to the large amount sent by the railways, which we need not point out, have been constructed within that period. The chaldron is computed at 53 cwt. To give a just idea of the position Newcastle holds as a "coal port," observe the amount raised in the United Kingdom during one year, 1869, viz., 107,427,557 tons.

Out of this quantity were:

Exported	10,233,135 tons.
Removed coastwise	10,294,176 ,,
Do. by rail, &c., to London	3,353,396 ,,
Consumed locally in producing districts	83,546,850 ,,
Total	107,427,557

Of the quantity exported, one-third is sent from Newcastle, and a fifth coastwise. The export seems to develop as facilities are afforded at the places contiguous to its particular "field." The export duty, which was abolished from the 14th August, 1850, by the 13th and 14th Vic., cap. 95, would have a material effect in retarding its exportation. A few figures will illustrate this. In the beginning of the century, the amount shipped annually from the whole kingdom scarcely exceeded what is now done in a single week at a large port. The declared value for coal, coke, and culm exported, was:—

In 1836	£244,898
,, 1847	968,502
,, 1854	2,127,156
,, 1864	4,161,338
,, 1870	6,246,133

The increase, after the abolition of the duty, is especially apparent. Since the first period named, the great docks and harbour improvements at the coal ports have been effected, and these two would cause a stimulus. The "bar" at Shields has been removed, and instead of 8 feet depth, 21 feet can now be obtained at dead low water. Vast improvements have been made in the Tyne, under the superintendence of

Mr. Ure, C.E. The Tyne and Northumberland docks are now glutted with trade; and an Act, obtained last year, authorises the construction of a new dock at Cobbledean. With all these facilities, the Tyne will bid more and more for a greatly improved trade. With one of the foremost coal-beds in the kingdom to form the supply, there is no room for a doubt on this point; unless, as Sir William Armstrong alleges, the exhaustion of the supply should take place soon by over-production.

To turn from the main elemental cause of Newcastle's prosperity, to other and minor sources, and enumerate the variety of manufacture and trade there, would be an endless task. Perhaps there are few ports in the Empire where such a surprising number of commercial elements is dealt in. The tariff of imports is riddled, and the export list exhausted, in satisfying the enterprising spirit of the merchants. Here are exported the most discordant articles: glass, earthenware, iron, machinery, steel, lead, paint, tar, copperas, sal-ammoniac, lampblack, grindstones, bricks, canvas, soap, alkalies, &c., are a few of the things.

The imports are: corn, seed, flax, hemp, linen, yarn, wine, spirits, fruit, sugar, tobacco, barilla, butter, cheese, hides, coffee, tea, woods, &c., &c.

The principal manufactures are the making of engines, and other machinery; the chemical works are very extensive; and of late years the Tyne has become one of the most famous sites for iron shipbuilding. There are other manufactories, such as foundries, soaperies, breweries, refineries, tanneries, &c., but they are too numerous to enumerate. A disruption in the coal trade would not swamp the "canny toon," and drive most of her working classes to be the recipients of public charity, as was the case in Lancashire, in 1863, during the "cotton famine;" and in the present year at South Wales, owing to the great strike in the iron trade. Although it would gripe the place sorely, there are many other sources of income. A few statistics will illustrate the progress and position of the district.

The shipping trade, foreign and colonial inwards, was—

	In 1861.		In 1871.	
At Newcastle ...	5,418 ves.	807,700 tons	6,011 ves.	1,555,193 tons.
,, N. & S. Shields	1,759 ,,	319,472 ,,	1,742 ,,	487,652 ,,
Total ...	7,177	1,127,172	7,753	2,042,845

The outward business in the same trades was—

	In 1861.		In 1870.	
At Newcastle ...	9,103 ves.	1,803,402 tons	8,822 ves.	2,633,073 tons.
,, N. & S. Shields	1,280 ,,	183,977 ,,	1,599 ,,	406,194 ,,
Total ...	10,383	1,987,879	10,421	3,039,267

The coasting trade inwards was—

	In 1861.		In 1871.	
At Newcastle	2,000 vessels	179,449 tons	3,058 vessels	413,785 tons
At N. & S. Shields	440 ,,	74,384 ,,	342 ,,	83,656 ,,
Total	2,440	253,833	3,400	497,441

The same trade outwards was—

	In 1861.		In 1871.	
At Newcastle	9,886 ves.	1,358,474 tons	8,132 ves.	1,753,826 tons
At N. & S. Shields	945 ,,	99,615 ,,	548 ,,	87,319 ,,
Total	10,831	1,458,089	8,680	1,841,145

The vessels registered were—

	In 1861.		In 1871.	
At Newcastle	634 ves.	137,746 tons	503 ves.	151,152 tons
At N. & S. Shields	1,173 ,,	275,278 ,,	883 ,,	254,603 ,,
	1,807	413,024	1,386	405,755

So far back as the year 1346 Newcastle must have been possessed of considerable property in ships, for in that year it contributed 17 vessels, manned by 814 hardy Tynesiders, to assist Edward III. in his celebrated siege of Calais. This force was one ship more than the number contributed by Hull, considered about that time to be the third port in the kingdom; and was only exceeded, amongst the northern ports, by Yarmouth. The number and tonnage of vessels built in the year 1871, were—

At Newcastle	73 vessels	44,286 tons
At N. & S. Shields	46 ,,	10,853 ,,
	119	55,139

The Customs' duties collected were—

In 1848 at Newcastle (which then included Shields)		£456,956
In 1858 at Newcastle	£262,867	£328,098
,, Shields	65,231	
In 1870 at Newcastle	£274,912	£307,684
,, North Shields	23,090	
,, South Shields	9,682	

Since the first year named, North Shields has been created a separate port; and, for some peculiar reason, South Shields has also, within a few years past, been raised to the rank of a "port." In examining the above figures it must be borne in mind that great remissions of Customs' duties have been effected of late years; and that the Tyne ports are

more concerned in the import of "free," than in what are called "high duty goods."

The population returns will show a more striking contrast than, perhaps, any of the other statistics. In order to do so properly, the borough of Gateshead ought to be included, for it is as much a part of Newcastle, as the "Surrey side" is a portion of London, they being only divided by the river, in each case.

The returns are—

In 1772 Newcastle and Gateshead estimated			30,000 persons.
In 1831 Newcastle	53,613	68,790	,,
,, Gateshead	15,177		
In 1861 Newcastle	109,108	142,695	,,
,, Gateshead	33,587		
In 1871 Newcastle	128,160	176,752	,,
,, Gateshead	48,592		

In 60 years the population doubled; in the next 40 years it nearly trebled.

The returns for the other two ports of the Tyne show that there were—

In 1861 at North Shields and Tynemouth	34,021	69,260 persons.
,, South Shields	35,239	
In 1871 at North Shields and Tynemouth	38,960	83,682 persons.
,, South Shields	44,722	

But the returns for the registration or union districts will display more adequately still the dense mass of people residing on both banks of the Tyne, from Newcastle to its mouth. They are—

	1861.	1871.
Newcastle	110,968	130,915
Gateshead	59,409	80,285
Tynemouth and North Shields	77,955	95,192
South Shields	44,849	74,441
Total	293,181	380,783

Owing to Newcastle being situated so far in the north of England, the commerce, in former years, suffered severely, by the many wars which arose between the English and Scotch. During the civil wars this was especially the case. In 1640, the Scots, under General Lesley, defeated the royalist troops at Newburn, and occupied Newcastle, holding it for a year. The effect on trade was most disastrous. One writer of the period states, that "At this time Newcastle and the coal mines, that had wont to employ ten thousand people, all the year long, some working under-ground, some above, and others upon the water in keels and lighters; now not a man to be seen, not a coal wrought, all

absconding, being possessed with the fear that the Scots would give no quarter; four hundred ships, using to be there often at a time in the river, not a ship durst come in." In consequence of such interruptions to traffic, several rival ports, notably Sunderland, being more out of the track of rival armies, and of less military importance, have benefited thereby. In 1644, 1647, 1649, 1715, and 1745, the town had to bear the brunt of these internecine strifes.

Other forms of suffering have also left their mark upon the place. In 1636 no less than 5,000 persons died of the plague. This fact shows the town was of considerable extent even then. In 1740 great distress was occasioned by the dearness of provisions, and a grievous riot took place. In 1771 a destructive flood took place in the river. In 1831 the Asiatic cholera broke out, and, in that year and the following, caused fearful misery. It again appeared there in the autumn of 1853, and occasioned great havoc. A dreadful explosion took place in 1854, which quite transformed the appearance of the "Queyside" and the opposite bank of the river. A fire broke out in a worsted factory on the Gateshead side, and spread to a warehouse, wherein were stored 3,000 tons of sulphur, 130 tons of saltpetre, 1½ tons of naphtha, and 5 tons of turpentine. The explosion which ensued was terrific, resembling a volcanic eruption, killing 53 persons, throwing down houses, unroofing whole streets, and causing fresh fires to arise in various parts of both towns.

Turning from these sad mementoes, it is pleasing to note the number of charitable and other institutions for the amelioration, relief, and comfort of humanity. Foremost is the Infirmary. Thousands of patients are relieved thereby yearly. It was founded in 1751. The income amounts to nearly £6,000—derived from subscriptions, donations, legacies, and the interest of investments, amounting to £23,000. A peculiar feature of this institution is, that a Turkish Bath is annexed to it; and, as a therapeutic agent, has been most serviceable. There are other establishments, such as a Dispensary, Fever House, Lying-in, Seamen's and Keelmen's Hospitals, Tyne Mariners' Widows and Orphans' Fund. There is also the Trinity House, which maintains 26 pensioners under its roof. This was once a powerful body, but recent Acts of Parliament have modified its powers. The Guildhall itself was originally a hospital, called the *Maison de Dieu*. It was founded "for the sustentation of nine poor men, and four poor women." This was in the reign of Henry IV.

The "Honourable Company of Merchant Adventurers" had a residence there at an early period. A curious custom, illustrating the habits of the old times, prevailed under its roof. Bourne states that, "It was in ancient times given to the town for a young couple, when they were married, to make their wedding dinner in, and receive the offerings and

gifts of their friends, for at that time houses were not large." That building was pulled down in 1658, and another rebuilt by Robert Trollop, in a more tasteful style. His work was acknowledged by his townsmen in a rather quaint legend, under his effigy on his tomb, which stood facing or pointing to the building from the Gateshead churchyard. It ran thus:—

"Here lies Robert Trollop,
Who made yon stones roll up;
When death took his soul up,
His body filled this hole up."

The Tyne district is the birthplace of many distinguished men—Lords Stowell and Elden, as lawyers; Ridley, the martyr-bishop of London; John Hersley, William and Elizabeth Elstob, Charles Avisai, Mark Akenside, Robert Mouism, as authors and scholars; Hutton, as mathematician; John Brand, as antiquary; Lord Collingwood, second only as an admiral to Nelson; Thomas Richardson and John Martin, as painters; the two Stephensons, as civil engineers; Sir William Armstrong, as mechanical inventor; and Richard Grainger, as builder and architect.

The works and labours of the latter have quite transformed the appearance of Newcastle. He began his work of reformation about fifty years ago, and continued it up to the time of his lamented death in 1861. In place of narrow, unhealthy, ill-built streets, he has given to Newcastle some of the finest, uniform, and massive thoroughfares in the kingdom.

One of the peculiarities of the Tyne is the employment of vessels called "keels." They are broad, flat-bottomed vessels, propelled by a large "lug" sail, and when loaded are almost level with the water. It was at Newcastle that the first law for the admeasurement of tonnage took effect, a law that applied to "keels that carry coals from Newcastle." This law is fully explained in our article on the Admeasurement of Tonnage in the volume of the *Nautical Magazine* for 1871. That article is specially interesting at the present time. The hardy class of men who obtain their livelihood on board of this class of craft are called "keelmen." They, for many long years, enjoyed almost a monopoly of the transport of coal from the pits along the river to the ships in the harbour and haven. Since the introduction of steamboats, railways, and the general use of "staiths," their numbers have been greatly reduced. The development of the railway traffic at Newcastle, at one time, was almost despaired of, owing to the gulf which seemed to exist between the banks of the river at that spot. The railway authorities seriously thought of leaving the place altogether for a better spot to bridge the stream. But the genius of Robert Stephenson solved the problem, and a structure was erected 1846-50, costing the immense sum of £491,153. The

station at the end of it cost £130,000, and is one of the most elegant and commodious in the kingdom. The "keel" period developed into the "rail" and "steamboat" period, with its gigantic enterprise. To meet which, and to rival the efforts made at Sunderland, it became necessary to dredge the river from Newcastle to the "bar"—a distance of ten miles. The object has been to straighten the course of the stream—to blast and remove obstructions—to dredge in order to deepen the bed—to remove the bar—and to build docks suitable to the increased traffic. To show the extent of the work, there were no less than 3,980,544 tons of *débris* raised and transported in one year—1871. Down to the end of that year the Improvement Commissioners have spent £793,096, and the labour is still going on unflaggingly. Two piers have been built out into the sea at the mouth of the haven—the north one extending for 2,100 feet, and south to 3,800 feet. When finished they will be 2,900 feet and 5,400 feet long, respectively. This undertaking altogether is certainly one of the wonderful engineering features of the age.

To the ports at the mouth of the Tyne belong the honor of originating lifeboats and life brigades—two organizations which, we do not hesitate to say, have been, and will continue to be, of incalculable service to the maritime population of the United Kingdom. From local publications of great interest, we compile the following records, with a proviso that it is not our province to settle the vexed question of who was the inventor of the lifeboat; this we must leave others to decide:—

The original lifeboat was built at South Shields, by subscription, under the direction and inspection of a committee of gentlemen who were appointed to that service, soon after the wreck and melancholy loss of the crew of the *Adventure*, of Newcastle, which took place in September, 1789, on the Herd Sand, on the south side of the entrance of the river Tyne: thousands of people assembled, and in their presence the men dropped one by one from the rigging into the sea. No one dare venture out in any of the boats of common construction to their assistance. Various plans and models of boats were presented to this committee for attaining the proposed object, amongst others, a model by Mr. Wm. Wouldhave, a native of North Shields, but then resident in South Shields, was first presented, and though not approved of, he was awarded a guinea for his trouble. This seems to have been the only premium awarded by the committee. Mr. Greathead, of South Shields, also sent a model, but they voted no compensation to him, the committee considering that in neither instance was the model shown suitable for the purpose. Greathead being a boat builder, the committee thought they had it in their power to compensate him for his trouble by employing him to build such a boat as they might determine on; from this it would

almost appear that the first lifeboat was the work of many brains. This arrangement was carried out, and on the 30th of January, 1790, the lifeboat built by Greathead was first used, when she brought safely ashore the crew of a vessel wrecked on the Herd Sand. William Wouldhave was a house painter by trade, and for many years clerk of St. Hilda's Church, South Shields, and was of a very inventive turn of mind; he constructed many curious instruments, amongst others, a clock, an electrical machine, and an organ; he would argue music with the organist, or philosophise with a keelman, he weighed up a ship that had been sunk at the mouth of the harbour, and was as original in appearance as manners; he died very poor, in South Shields, on the 28th of September, 1821, in the 70th year of his age: the figure of his proposed lifeboat is cut upon his tombstone in St. Hilda's church-yard, with an inscription on it, by some ardent admirer, that he was the inventor of the lifeboat.

Greathead was much more fortunate, in consequence of the extensive application of the principle of the lifeboat; he, being the builder of the first, received very flattering compliments from persons of the highest rank—namely, a diamond ring from the Emperor of Russia, a Parliamentary grant of £1,200 and one hundred guineas from the Trinity House, also a silver medallion from the Royal Humane Society, and a gold medal from the Society of Arts, with a purse of fifty guineas; with others. Notwithstanding all this he died bankrupt. It is needless, at this day, to speak of the enormous benefits which this invention has since conferred on all those who go to sea in ships, and the inhabitants of South Shields may well feel proud that the first lifeboat was built there.

We now turn to the life brigade, which is of much more recent origin, the first in the country having been formed in the borough of Tynemouth, just after the wreck of the steamship *Stanley*, which event took place on the night of the 24th of November, 1864, on the Black Midden Rocks at the north side of the entrance to the Tyne. On that occasion about 30 persons lost their lives, and we cannot better describe the motives which actuated the gentlemen who were instrumental in forming this institution, than by quoting from the original letter, of which we happen to have a copy, calling the attention of Her Majesty's Privy Council for Trade to the subject:—

"On the occasion of the stranding of the steamship *Stanley*, on the night of the 24th of November, 1864, a great number of people assembled on the shore and cliffs, close to the scene of wreck, who were willing to render the Coastguard all the assistance in their power, but owing to the storm and darkness of the night, and the total want of organization, it was impossible for any one to tell whether he was doing

good or harm. So convinced were many of the inhabitants assembled on the occasion, that an organized body of men, trained in the use of the apparatus, ready and willing to assist the Coastguard, might have rendered valuable aid, that it was decided to try to raise a volunteer corps, to be under the command, and regularly trained by the Coastguard, whose duty should be to assist them in their endeavours to save life from shipwreck, by means of the Rocket Apparatus." In the same letter a hope is expressed, "That if these services are accepted, and the matter carried out with spirit, it may be the commencement of a movement throughout the United Kingdom which may be of great service, as it is self-evident, that the two or three Coastguard at a rocket station are in a great many instances almost powerless without the aid of volunteers."

The hope thus expressed has been realized. This realization was in a very great measure brought about by Mr. J. Foster Spence, of Clinton Villiage, North Shields, who at the time was Mayor. Mr. Spence's name will always be connected with this movement as intimately as the name of Greathead is with the lifeboats. "The Borough of Tynemouth Volunteer Life Brigade" was at once organized, and has since mustered from 140 to 150 members: Cullercoats, a village about a mile and a half north, took it up in June, 1865, and has at present a brigade numbering above 100 men; South Shields, on the other side of the Tyne, following, in December, 1865, with a brigade which is at the present time 110 strong. Under the care of the energetic officials of the Board of Trade, the movement has extended all round the coasts of the United Kingdom, on which there are at present 9 brigades and 129 companies of volunteers, the difference between the two being, that the brigades receive a small sum of money annually in aid of their funds, whilst in the companies each man is paid a trifle for his attendance at drill, or when on actual service. The annual allowance to these brigades is expended in keeping in repair the watch-house in which the members assemble on stormy nights, and also in supplying the men with refreshments, nothing stronger than coffee being allowed on these occasions; subscriptions and donations are also given by ladies and gentlemen in the neighbourhood in aid of the funds.

These brigades and companies have already been instrumental in aiding the Coast Guard in saving many lives, upwards of 100 persons having been safely landed by the Rocket Apparatus near the mouth of the Tyne during the eight years which have elapsed since they were organized.

That this service is not altogether devoid of danger to those engaged in it, is clearly shown by the sad accident which happened to a member of the Tynemouth Brigade on the night of the 17th of December last, when Mr. Robert Thirlway Arkley, whilst assisting his comrades to save the crew of the barque *Consul*, of South Shields, wrecked on the end of

the North Pier, was washed away by a huge wave, and drowned. More than a dozen of the men were knocked over at the same time, but providentially escaped being carried away.

Since these brigades and companies were formed, many matters of great moment have been prominently brought to the notice of the authorities, amongst others the fact, that on the average not more than one ship's crew out of six knows anything of the use of the apparatus, and this in spite of all the printed instructions, which are issued at every shipping office in the United Kingdom. A proposal has in consequence been made, that every vessel sailing from a British port should be compelled to carry these instructions enamelled on zinc, white ground and black letters, fixed up in some conspicuous place on her deck. We hope this will shortly be carried out, and as the cost will be only a trifle, about 7d. each, there can be nothing to hinder it being done at once. Dozens of lives are lost annually for want of this knowledge.

The causes, which have combined to promote the high position of the Tyne, are not remote. They may be classed thus :—

1st. The coal field.

2nd. The geographical situation.

3rd. An enterprising people.

Especially to the inventive genius and commercial talent of her sons does she owe her prosperity. But for these her coal would have lain hid, and the sails of many ships would not have mantled on her bosom. It is the labour of body and brain which creates wealth ; and without its exercise mines of untold richness may be unrevealed for ever.

"Blood Money" at San Francisco.—We are happy to be able to state that in consequence of the energetic measures which have been adopted by the English Consul at San Francisco, with the hearty co-operation, both of the consignees of British vessels, and of the United States' Shipping Commissioner at that port, the combination of the sailors' boarding-house keepers having for its object the extortion of a bonus, or "blood money" for every seaman shipped, has been entirely broken up. The owners of several ships have, through the representations of the consignees, instructed their masters to be firm in resisting the imposition, and at the instance of the United States' Shipping Commissioner. Several boarding-house keepers have been arrested for conspiracy, and for retaining money which should have been paid to the seamen. The result of these measures has been that wages have already fallen to thirty dollars a month, with two months' advance, and there is every reason to hope that an effectual stop has been put to the malpractices of the boarding-house league.

CAST-IRON VERSUS COPPER.

THE regulations of the Prussian Government bearing on this subject are as follow:—

"The use of cast-iron for the shells of boilers, fire-pipes, and boiling-pipes, is without exception, and without regard to dimensions, forbidden. In this respect the following are not to reckon as parts of the shell—viz., steam-domes, valve-boxes, manhole-doors, doors, cleaning holes, and stud-pipes, the last so far as they are not in contact with the fire."

"The use of brass is equally forbidden, it is, however, permitted to use sheet brass for fire-tubes up to an inner diameter of four inches."

"Fire-pipes and boiling-pipes are tubes exposed to flame internally, and tubes having water inside and flame outside. Stud-pipes are the neck pipes connecting the pieces of boiler, such as are sometimes put between a cylindrical boiler and a horizontal steam-chest, or superheater."

These regulations, so far as they go, meet with our approval. The steam-domes referred to, being understood by us to be cast-iron bonnet pieces only, and not extensive steam-chests or superheaters, to which we would apply the same rule as to the shell of the boiler proper.

This article was in type in March last and press of matter has prevented its earlier appearance. In the meantime events have, in a remarkable manner, corroborated the opinions herein stated. Since then four cases of failure of steam-pipes have been brought under our notice, and we will here give the general features of these accidents.

The first of these was a lamentably fatal accident, the bursting of a large copper bend in a steamer lying at anchor, when the pressure of steam was considerably less than that at which the engine had been worked for some years without any sign of weakness being seen in the pipe. The cause of failure was assigned to an original defect, a thin part produced by hammering, in forming the bend. The copper of this bend appears to us to have been altogether too thin. Three-sixteenths copper is too thin for working into a bend for a 16-inch pipe for 30lbs. pressure.

The next, a cast-iron pipe, had been under steam on a trial trip at a high pressure and showed no flaw. When steam was next got up, and while only at a low pressure, a crack was discovered in one of the pipes near to a flange. The cause of this has been assigned to various circumstances, each indicating a possible source of danger, and therefore worth recording here. The first was that the pipe had but little clearance from a corner of a bunker above it, and that the alteration of range of the pipes, or a slight working of the vessel had brought the two surfaces into contact and strained the pipe to its detriment. The obstruction

was afterwards cut away to give clearance. The second was that the pipes had not fitted well at the flanges, and that the workmen had treated them as he would have done copper pipes, drawn the flanges together with the bolts and overstrained the metal. The pipes were replaced by others having a stuffing gland at this place instead of flanges. The third was that the expansion of the boilers in height was more than that of the engine, and thereby produced a strain which would act with a leverage equal to the distance of the boiler from the place of fracture. The giving clearance above the pipe, and the addition of the stuffing gland joint, would obviate this action. The fourth probable cause is perhaps the true explanation. The range of pipes had been put up with a slight bend, the depression at the place of fracture being sufficient to allow water to lie in the pipe at this place, up to the centre of the pipe. When steam was admitted, the upper half of the pipe would be rapidly heated and the lower half would for some time retain its lower temperature, the water conveying heat downwards very slowly, and in this way an unequal expansion would be produced, the upper half of the thick pipe becoming longer than the lower half, and thereby producing fracture. To meet this the pipes were altered to have a run, so that they would drain themselves, and so prevent an accumulation of water at any part.

The third failure was a seam rip in a copper steam pipe, disabling a vessel at sea.

The fourth was in cast-iron pipes. The steamer was crossing a bar; the master of the vessel had miscalculated the depth of water and the vessel was caught on the bar in a heavy sea. The engines were jumping at every bump and the steam-pipes were so strained that the engineer, expecting them to give way at the engine, left that place and stationed himself at the stop-valve on the boiler, and, after severe straining, the pipe broke across at the cast-iron neck at the cylinder casing, when the steam was at once shut off. This was a compound engine with steam of high pressure.

In these four examples which we have not hunted up, but which have come under our notice in the way of business, we have practical illustrations of those properties of cast-iron and copper we have described in former articles. These have all happened since the earlier part of our articles were in type, and we have no doubt that many more have occurred we have never heard about. The lesson they teach us is, that steam pipes, whether of copper or of cast-iron, are not yet what they ought to be. Copper pipes are, as a rule, too thin, and cast-iron pipes are too rigid. In the last of these examples the neck that broke was that containing the throttle valve; this is generally made of cast-iron or of brass, even when all the other pipes are, as they were in this

case, of copper. There is reason to believe that even if this had been of copper, it would have broken off at the flange just as the cast-iron pipe did. It is wise in every case to see that all steam-pipes are properly supported, and yet so provided with expansion joints that they will, to some extent, yield with the moveable structures to which they are attached. The run of the pipes also, whether these are of cast-iron or of copper, should be such as to drain the pipes, as accumulations of water in steam-pipes are sources of danger, not only leading to unequal expansion, but liable to be shot along a pipe with great force by a sudden admission of steam, to act as a water ram on the bends, and, by the concussion, to produce a destructive strain.

Cast-iron pipes close upon the boiler when superheated steam is used, sometimes deteriorate internally very rapidly. The action is very irregular, being in some vessels most destructive, and in others harmless. The difference is no doubt due to the different circumstances of temperature and priming, and to the galvanic action of brass in the stop-valves. Cast-iron stop-valve valve-boxes on boilers, and the pipes attached to the boiler, especially where high pressure is used, should therefore be examined internally at least once a year, and the state of the pipes reported.

Another consideration which has been taken into account by manufacturers in excluding wrought-iron pipes, and preferring cast-iron for the conveyance of steam, is the difference in oxidation. Cast-iron rust is almost a powder, whereas wrought-iron rust forms in laminæ of considerable thickness, and when detached from the surface of the pipe, is carried on by the steam to the working surfaces of the cylinder and does there great harm. Cast-iron rust is not so injurious in this respect, and in some cases there seems to be a skin formed on the inside of the cast-iron pipe as if oxidation had altogether ceased, but the inside of wrought-iron pipes is continually exfoliating scales of rust to the detriment of the valve faces and cylinder surface.

Mr. Plimsoll's Book.—We had proposed to publish this month an article criticising this remarkable effusion, and placing certain facts of our own knowledge in juxta position with Mr. Plimsoll's daring and alarming statements. The article is still in type, but we have advisedly abstained from inserting it, pending actions or proceedings taken, or about to be taken, against the honourable member for Derby.

HORSE-POWER.

STEAM-engines in their earliest applications took the place of horses, chiefly in working pumps or mills. In substituting the new power for the old, it was necessary to adopt some standard of comparison, to ascertain what size of engine would be required to perform the work previously performed by a known number of horses, and generally to compute the dimensions and proportions of machinery, through which a given power had to be transmitted.

The technical notion of *power* as a thing to be measured is simple enough, although it may not be readily grasped by a mind before which it is brought for the first time. Of power, generally, everyone has a tolerably distinct idea; as of the power of wind, or of waves, or of a torrent to sweep obstacles from its course; of the strength of one man as compared with that of another man, to lift a weight, or to throw a bar; of the strength of one horse as compared with another, to draw a load. But such general ideas of power have, by no means, that precision which is necessary for purposes of accurate mechanical comparison. The question for the engineer is not to ascertain whether one animal, or one engine, is stronger than another, but how much stronger, or how many times more powerful one agent is than another. As in estimating the dimensions or weight of any object, it is necessary to have a unit of length, such as a foot or a yard, and a unit of weight, such as a pound or a ton, so that by naming the number of such units in two or more objects, they can be numerically compared with one another; so, in estimating the power or capability of any natural or artificial moving agent, it is necessary to have a unit of power, so that capabilities of doing work can be compared in numbers of such units.

Units of ordinary measurement are of a very simple character: pure length, extension or capacity, or pure gravity for weight. But the unit of power is necessarily of a more complex character, for it takes into account several elements, every one of which forms an essential part of any power.

The first element of power is weight lifted, or gravity overcome; and here it is manifest that the greater the weight lifted, the greater is the power applied in lifting it. In other words, power is directly proportional, in the first place, to the number of pounds lifted or moved in opposition to gravity.

The next element of power is the height through which the weight is lifted, or the distance through which the resistance is moved. To lift a ton two feet manifestly requires twice as much power as to lift a ton one foot. Power is, therefore, proportional, in the second place, to the number of feet through which the weight is lifted.

The true elements of weight and distance are compounded into one which is called *work*, and which means the product of the number of pounds lifted by the number of feet through which they are lifted, and this product is expressed by the term foot-pounds, written ft. lbs. Thus, 3 lbs. lifted 4 feet produce, 3 lbs. × 4 ft. = 12 ft. lbs. of work. And here it is to be remarked that the two factors, lbs. and ft., may vary to any extent, and yet the work may remain constant if the *product* of the two factors be unchanged. For example, since 12 = 1 × 12, or 2 × 6, or 3 × 4, &c., it is to be understood that the work expressed by 12 ft. lbs. may be made up of 1 lb., lifted 12 ft., or 2 lbs. lifted 6 ft., or 3 lbs. lited 4 ft., &c.

The third element of power is the speed with which the work is done. A mouse, taking time enough, may move, grain by grain, a sack of wheat, which a man can barely lift; in other words, the mouse could do as much work as the man, though it has by no means the power of the man, because it does not do the work with the same speed, or in equally short time. The unit of time commonly adopted in estimating power is one minute, and the power is expressed as the amount of work done per minute. Suppose, of two machines the one lifts 3 lbs. 4ft. high in 1 minute, and the other lifts 3 lbs. 4 ft. high in 2 minutes. Here it is manifest that the former has double the power of the latter, for while the former does 3 × 4 ft. = 12 ft. lbs. per minute, the latter does 3 lbs. × 4 ft. = 12 ft. lbs. in 2 minutes, or only 6 ft. lbs. per minute.

In comparing powers with one another, therefore, the rule is to multiply the weight moved in pounds by the height lifted in feet, and divide by the time occupied in minutes. For example: if it were desired to ascertain the dimensions of a steam-engine capable of raising 6,000 gallons of water 100 feet high per day of ten hours; since one gallon of water weighs 10 lbs., and since each hour contains 60 minutes, the computation would be (6,000 gals. × 10 lbs. × 100 ft,) ÷ (10 hrs. × 60') = 10,000 ft. lbs. per minute. Now, if the piston of the engine made 100 double strokes each of 1 ft. per minute, that is to say, if it moved at the rate of 200 ft. per minute, and if it had on it a pressure of 50 lbs., its power would be 50 lbs. × 200 ft. = 10,000 ft. lbs. per minute. or just equivalent to the power required for raising the water. Of course, in making such an engine, it would not be sufficient that its power should just balance that of the work to be done; it would have to be made some 30 per cent. in excess, in order to overcome friction and other resistances, and provide margin enough for giving all the parts their necessary movements in the time, or at the rate assigned.

With the measurement of power, as indicated above, all engines, machines, or natural powers could be readily compared; but as for even moderate powers, the number of ft. lbs. per minute is large, it would be

as inconvenient to use the ft. lb. per minute as the unit of power, as it is to employ the farthing as the unit of value, or the second as the unit of time. In order to obtain a larger unit, the horse-power has been had recourse to; and, as stated above, there was, on the first introduction of the steam-engine as an agent of mechanical movement, a good reason for adopting the horse-power as a standard, in order that the new force might be readily compared with the forces which it was to supercede.

Various engineers and men of science made careful experiments on the power of horses, and arrived at various conclusions. Smeaton estimated the power of a horse at a little under 23,000 ft. lbs. per minute; Desaguliers at 27,500; and Bolton and Watt, experimenting with strong brewers' horses, made it amount to 33,000 ft. lbs. per minute. The latter number is that which is now universally adopted. And hence, giving the number of ft. lbs. per minute performed by any mechanical agent, or necessary for any mechanical work, the horse-power is found at once by dividing this number by 33,000.

It really matters very little whether the number, 33,000 accurately, represents the power of a horse or not. So long as it is generally accepted as a standard unit to which powers are referred, it is just as useful as the unit of a foot is for measures of length, although there are few human feet that come up to that standard.

Having a correct mode of estimating power, and a recognised standard unit of measurement, little difficulty might be apprehended in accurately stating and knowing the power of any steam engine. Unfortunately, however, engineers and persons purchasing and using steam-engines, instead of confining themselves to one standard of power measurement, have got into a state of the utmost confusion by making most unwarrantable distinctions between what is called *nominal* horse-power and what is known as *indicated* horse-power. When the Lords of the Admiralty order a pair of engines of 1,000 horse-power, they expect them to work at 6,000, and sometimes the 20-horse engine of one maker does twice as much as the 20-horse engine of another. When a steamer is advertised as having 500 nominal horse-power, it is impossible to know whether the engines work up to 2,000 or 3,000 horse-power.

Several causes may be assigned for this confusion. The first engines were made to work with steam of very low pressure, and necessarily their cylinders were large so as to present a great area of piston for that low pressure to act upon. As engineers became more bold, and higher pressures came into use, the power of an engine of certain dimensions became greater. Thus the engine which with low pressure steam gave out 100 horse-power, perhaps gave out 300 or 400 horse-power when steam of higher pressure was supplied to it. Much of the confusion

may also be attributed to the competition of rival engineers. One engineer sells what he calls his 100-horse engine, but makes it of such proportions that it gives out double the nominal power. A competitor also sells a 100-horse engine, but, in order to surpass his rival, makes it so that 300 horse-power is got from it. And thus, step by step, the actual power of engines has come so far to surpass the nominal, that a purchaser almost holds himself to be defrauded if he does not get from an engine five or six times the power which is nominally attributed to it.

If it were difficult to ascertain the actual power of an engine, there might be some excuse for such a state of things, just as, before the invention of the hydrometer, the purchaser of brandy or other spirit might pay at spirit price for various proportions of water mingled with it. But as the hydrometer affords the means of accurately estimating the strength of spirit or the extent to which the pure or absolute spirit is diluted with water, so the indicator supplies an accurate measure of the actual work done in a certain time by the piston of a steam-engine. Scarcely an engine, and certainly no engine of any magnitude, is now sent out without having the indicator applied to it, and by this instrument its actual power is readily ascertained. The power so measured is called the indicated horse-power, and is generally tabulated side by side with the nominal horse-power, exceeding the latter from four to six fold. Why should Government boards and trading and manufacturing companies persist in maintaining this nominal power, which means nothing, and serves no purpose except to mislead? Would it not be better to discard it entirely, and adhere exclusively to that which is at least a correct measure of what an engine should do, making proper allowances for friction and other losses?

As has been already stated, the indicator supplies a correct measure of the power manifested by the *piston* of a steam-engine. But before that power arrives at the screw-propeller or other machine which it has to work, it has to pass through rods and cranks and shafts, and has to give up portions of its power to work slides and pumps and other parts of the engine. And in this transmission of power different engines lose different fractions of their pristine power. Some lose 30, some 40 per cent., leaving a residue of 70 to 60 per cent. of efficiency to act on the machine to be worked by the engine. Among engines, however, made by engineers of repute, the variations in efficiency are not great, and the indicated power may therefore be taken as a fair measure for comparing one engine with another, it being always understood that some 30 or 40 per cent. is to be deducted in every case in estimating the capability of doing actual work.

The question of employing indicated rather than nominal horse-power as a measure, becomes of great importance in the classification of

vessels, especially at the present time, when steamers are so largely superseding sailing ships. Lloyds' surveyors, in classing a vessel, take into account not only the material and construction of the hull, but also the character and proportions of the masts, sails, and rigging—the propelling power. They will soon have to class steamers in a manner which will afford some index of their varying capabilities to ride out a squall without parting with their anchors, or to keep off a lee-shore in a gale. For this purpose the statement of the *nominal* horse-power would be worse than useless, because it would be positively fallacious. The nominally 100-horse engines of A work up to 400 horse-power indicated, while the nominally 80-horse engines of B develop 480 horse-power by the indicator. It would be hard upon B that his vessel should be classed below A's in respect of power, when really it should stand considerably higher. As every pair of marine engines, almost without exception, have now their indicator diagrams taken, not alone on a trial trip, but also under ordinary conditions of a voyage, there could be no difficulty in furnishing Lloyds' and other Lists with correct information as to the capabilities of every steamer. The indicated power compared with the tonnage, stated as so many horse-power per ton, or per ten tons, would then afford a fair criterion of safety under circumstances when the steam-power must necessarily be called into requisition.

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IMPORTS OF SKINS AND FURS INTO RUSSIA.—The Board of Trade have received from the Secretary of State for Foreign Affairs a copy of a notification of the Russian Government, announcing that from the 1st January, 1873, the importation into Russia of skins and furs of the sea otter will be permitted, subject to the delivery of securities guaranteeing the payment of Customs' duties when definitely fixed by the Council of the Empire, in such manner that one-half of the duties will be payable immediately after the decision of the Council, and the other half in the manner prescribed by the Annex to the Article 858 of the Customs' Regulations.

REVEL.—DISCHARGE AND SHIPMENT OF CARGO AT NIGHT.—In consequence of complaint having been made that vessels are not allowed to discharge cargo at Revel, except between the hours of 9 a.m. and 8 p.m., notice is hereby given to owners and masters of British vessels, that there is an order in force at all Russian ports requiring the officers of customs to allow vessels, in cases of urgency, to load and discharge cargo by lantern light if they obtain the permission of the captain of the port—chêf de port.

DESERTION.

WITHOUT desertion there can be no crimping. The latter, however, frequently produces the former. To suppress crimping there are various penal sections in the Merchant Shipping Acts. For many years these powers were left to sleep, and at some ports, even yet, they are not half awake. One port—Cardiff—seems to be "wide awake," we are glad to say. Previous to 1866 it had the "bad eminence" of being the worst in the kingdom. Now it stands foremost in respect of the effective mode in which crimps and deserters are dealt with. To show this more explicitly, we append returns which are made annually to the magistrates there by the Superintendent of Mercantile Marine. And we are glad to learn that the Bench takes a special interest in the matter at that port. The returns are :—

No. 1.—SEAMEN SHIPPED, &c., ON FOREIGN-GOING VOYAGES, YEAR 1872.

Description.	Number.	Number not joined at Sailing.	Loss per cent.
British ...	15,613	384	2·41
Foreigners ...	2,418	52	2·15
Total ...	18,031	436	2·41

No. 2.—ANALYSIS OF THE NUMBERS NOT JOINED, 1872.

Seventeen arrested in Cardiff; 5 ditto at other ports; 10 reported themselves—32, total convicted. Eleven excused by Bench; 245 the owners, &c., of ships refused to prosecute; 148 could not be traced—436, total not joined as in No. 1.

No. 3.—CONVICTIONS IN ALL CASES PROSECUTED BY OFFICERS OF MERCANTILE MARINE OFFICE, 1872.

Nature of Offence.	Result. No.	Result. Weeks.	Fines.	Section of M. S. Act 54, &c.
Neglecting to Join Ship at Cardiff and other ports	34	172	—	243
Desertion	16	102¾	—	,,
Refusing to proceed ...	7	18	—	,,
Harbouring Deserters ...	1	12	£20 0s.	257
Enticing to Desert ...	1	8	£5 0s.	,,
Using False Discharges ...	2	12	£2 0s.	176
Making False declaration to obtain certificate of competency	1	—	£20 0s.	140
Detaining Seamen's effects	1	2	15s.	236
Assault on Officer ...	1	2	£1 0s.	Com. Law.
Causing obstruction ...	1	12	—	,,
Total year	65	340¾	£48 15s.	—

It is well known that there is no particular prosecutor mentioned in the Merchant Shipping Act, 1854. The Board of Trade have a kind of patron care of it, and generally prosecute delinquents. But in the case of desertion it is the aggrieved party who prosecutes. This is a common sense proceeding, for there must be many cases where only the owner or master of the vessel could know the extent of the damage done; and, indeed, the 243rd section, paragraph 2, of the above Act, leaves it to the latter to give the offence the character of desertion or not. In looking at the above figures, it appears that the owners and masters take rather undue freedom with this privilege. They, as a general rule, make a great howl about the amount of desertion, &c., but the question is: *Do* they take the proper steps to help themselves; and put the great engine of the law in operation to check the evil? If that were not done at all these offences would simply run rampant, because unchecked; and, judging from the Cardiff figures, it appears that half at least of the cases they decline to punish.

Turning from the offence of "neglecting to join," there is the other form of desertion, which we are glad to perceive the Cardiff authorities have taken in hand. This is that form of desertion which takes place from vessels going there to load up, *en route* from home to foreign ports. This has been loudly complained of by visitors to all coal-loading ports, especially the South Wales ones. Nothing but desultory efforts have as yet been made to suppress it. Now, we are glad to perceive, by the report of the Chamber of Commerce, at its meeting held at Cardiff on the 22nd of January last, that a concerted scheme has been developed for its suppression. The following is the report:—

"THE PREVENTION OF DESERTION FROM SHIPS.

"Mercantile Marine Office, Cardiff, Dec. 30, 1872.

"Sir,—The Lords' Committee of Privy Council for Trade, have been pleased to appoint two additional police messengers or runners at this office, principally to assist in suppressing the desertion which so frequently takes place from ships arriving from London and other home ports to load, *en route* for foreign ports.

In attempting to carry out this object, it is essential that owners, masters, and consignees of vessels should act concertedly with the officers, and I know of no better plan than in asking the kind assistance of the Chamber of Commerce to urge upon its members who are connected with shipping, and others of the community similarly circumstanced, over whom the chamber has influence, to use all their energy to put the law against desertion and crimping in action, so as speedily to obtain the end desired. It is well-known that the other great evil—of 'neglecting to proceed to sea' at sailing, has been reduced to a minimum, and there

is no reason to believe but that the inward desertion might be similarly reduced by the co-operation of all parties concerned.

"In order to accomplish this I would suggest that all ship-brokers should advise their clients:—

"1st. To deposit agreements at this office immediately on arrival.

"2nd. To prosecute all *bona fide* deserters.

"3rd. If desirous of discharging any seamen, to do so legally at this office.

"4th. If the masters or any of the officers have not seen the crew sign the agreement, the men should be mustered on arrival here and asked to acknowledge their signatures before leaving the ship.

"A considerable amount of desertion is created, so to speak, by masters allowing their men to go without a legal discharge. It becomes then a difficult matter to decide who are really deserters. I would, therefore, respectfully urge your Chamber to enforce on brokers the desirability of checking this practice.—I am, sir, your obedient servant,

"T. S. MILLER, Superintendent.

"The Secretary, Chamber of Commerce, Cardiff."

The letter was received with approval, and the Chamber ordered that it should be printed, and circulated among the shipbrokers of the port.

In addition to the regulations thus propounded for the government of brokers and shipmasters, arrangements have been made by the superintentent of Mercantile Marine, whereby a police messenger will be in attendance at each of the three principal docks at tide time. His duty will be to ascertain that all of the crew have joined ship at sailing, if not, trace the delinquents, and get them on board, or, if authorised, to arrest them. He will also attend the inward bound vessels having existing agreements, and check desertion from such vessels. He will also be required to prevent all unauthorised persons from boarding ships on arrival at his particular dock, and put in force the powers given by the 237th section Merchant Shipping, 1854, when authorised to do so by the master of the ship. By these means it is hoped that an effectual stop will be put upon desertion, both from inward and outward bound ships at the port of Cardiff. These arrangements are consequent upon the recent visits of Messrs. Gray and Hamilton to the ports in South Wales.

THE PILLAR OF CLOUD.

THE story of the emigration of the Israelites from ancient Egypt, the land of their bondage, to Canaan, their land of promise, "unto a good land and a large, unto a land flowing with milk and honey," presents to us, in the details of its accomplishment, scenes of incident and a system of locomotion that contrast strangely with what we are familiar in the emigration that is now being borne westward by our ocean steamers. Their journeyings in the wilderness extended over forty years, but the half of forty days is now more than sufficient to carry the people dryshod over an ocean, whose width is ten times the expanse that separated Ramases from Jordan. The old emigration was in the day of miracles and of wonders, and of the visible presence of the Almighty, who had chosen the children of Israel to be above all nations of the earth His peculiar people, while ours is in the day of work, and of self-reliance on a world whose earth is cursed for our sake. But the wise are now beginning to interpret the "cursed be the earth for thy sake" not as "cursed be the earth, that thereby thou mayest be cursed," but as "cursed be the earth FOR THY SAKE," for thy blessing. The sorrow of toil and the sweat of the brow are a greater heritage than the luxury of idleness and coronets of pearls.

Although God no longer forces His personality on mankind by miraculously addressing studious shepherds from the midst of burning bushes, by wrestling with sleeping patriarchs, or by passing, with face averted, His worshipper hidden in the cleft of a rock; nevertheless, the day of miracles has not passed away, but only developed, its noon has not come yet, but with the sun high in the heavens the objects in our landscape are so much better defined, and their connection and their completeness are so manifest, that we fail to recognise any resemblance between them and those isolated objects seen but dimly in the morning twilight of the day; things that, seeming in that twilight to have no foot on earth, appeared to hang from heaven. Where all is miracle nothing is wonderful, and he who should succeed in producing something that he can thoroughly understand, something he has wholly bereft of mystery, would now be esteemed the greatest magician the world ever saw.

Looking back upon the twilight wonders, we find that the most remarkable fact in the journeyings of the Israelites was undoubtedly that "the Lord went before them by day in a pillar of cloud to lead them the way, and by night in a pillar of fire to give them light to go by day and by night: He took not away the pillar of cloud by day nor the pillar of fire by night from before the people." We can readily imagine the awe that fell upon them when they looked upon that which they believed to be the visible presence of Deity, before which the Red Sea had become

dry land for their feet, and what an interest they would feel in its movements and aspect. Upon one occasion "the cloudy pillar descended, and stood at the door of the tabernacle, and talked with Moses, and all the people saw the cloudy pillar stand at the tabernacle door: and all the people rose up and worshipped every man in his tent door: and the Lord spake unto Moses face to face, as a man speaketh unto his friend." It is not our purpose to separate that which is spiritual from that which was material in this manifestation to those Hebrew pilgrims; it is repeated in the history of every man who, by devious wandering for some forty years through a wilderness of sin, comes at last to the waters of Jordan. His realisation of the presence of God has been in the day of his light that God was before him leading the way, but seen as yet only by the eye of faith, and enshrined in mystery, a pillar of cloud standing upon the earth and reaching up into the heavens, but in the night of his ignorance his idea of God is that He is a fire, a fire giving light, but inapproachable, "a consuming fire."

So much for the ever-truthfulness of the story in man's mental experience; but if the material realization of the pillar of cloud be desired, behold our ocean-steamers carrying their nations of emigrants westward from their old scenes of toil to their new land of promise; a pillar of cloud by day, that is too often also a pillar of fire by night, is continually ascending that they may "go by day and by night." In that pillar of cloud, Deity has, as a material presence that can be realized by those who search to find out God, and if he that hath ears to hear will but listen to the voice that comes from that pillar of cloud, he will recognize the voice to be "the voice of the Lord speaking face to face as a man unto his friend."

It is a voice speaking to him words of greater friendliness than were ever expressed to Moses. It tells us that before the mountains were settled, when as yet He had not made the earth nor the fields, nor the highest part of the dust of the ground, and millions of years before there was a man upon the earth, man had a friend, and that friend is He who speaks to us from the pillar of cloud. This friend, "the Great Spirit," anticipating the coming of man, who was to be His heir upon the earth, and who should bear His likeness, determined he should not lack for anything to uphold that dignity, and purposing to give him power as well as dominion, even then prepared for his future use a vast store of material force—petrified action, preserved blocks of Almightiness, whose possession should give him dominion over all the earth, and make him mighty beyond any creature that ever moved upon its surface. He carried out this design by planting immense forests of giant pines and tree ferns; He forced their growth by conditions of climate more favourable to vegetation than any that have ever since existed;

then by the torrents of mighty rivers overflowing their ice-bound channels, He uprooted those giants of the forest and carried their trunks on to be entangled in a marine jungle growth He had prepared at the mouths of those rivers. These in time He submerged to be silted over with the rock-worn soil held in suspension by the water of the estuary; again they were elevated, and another forest flourished there with its luxuriant jungle growth, and anon that was also depressed and covered with a deposit of mud; and this was again and again repeated, until by the action of immense pressure, continued for an inconceivably lengthy period of time, the beautiful forests, the peat moss, and the jungle, were changed into hard black coal—the most precious diamonds of the earth, being unto man condensed power, sealed-up dominion. Look at the mighty things that are being done for us around a million altars, from which there continually ascends the pillar of cloud. Consider our locomotion by sea and by land; can we take the credit of these to ourselves, and say, Behold what we have done; it is all our own doing? No; our Friend, that Great Spirit, who speaks from the pillar of cloud says to us, in reference to these miracles of locomotion, as he spoke to the Israelites of old, the lesson of the miraculous crossing of the Red Sea. He says, "I bare you on eagle's wings, and brought you unto myself, now, therefore, if you will obey my voice, indeed, and keep my covenant, then ye shall be a peculiar treasure unto me above all people, for all the earth is mine." Compare the crossing of the Red Sea, on foot, with the miracle of steam locomotion, surely far more emphatically can "being borne on eagle's wings" be applied to our experience, and unto the civilized nations of the earth, but especially unto those who have the power of eagles' wings, do these words apply with more intensity than they ever could have been felt by the Israelites; that the object of His bearing us on eagles' wings is that He might bring us unto Himself, to be a peculiar treasure unto Him, above all people; for all the earth is His, all the nations of the earth are his treasure, and they who obey His voice are His peculiar treasure.

Let us begin to recognise the miracles of our time in their true magnitude; the one axe-head that floated for a few seconds on Jordan, when the iron did swim, has stood as a wonder for 3,000 years, and even yet with the majority of us is allowed to eclipse in miracle all the hundreds of thousands of tons of iron that are now swimming. While the ancients in every nation have delighted to throw up to the surface of their records the golden weft of miracle that by crossing the warp of fact makes up in every age the web of history; we, in the present day, do all that we can to hide this weft thread, which is in the web all the same, and to bring to the surface the pile of the straight material warp only. Is this not an error, for it hides from us much that is beautiful around us, and that was meant for the gratification of the highest functions of our spiritual nature,

and it leads us also to judge the ancient races of men by the rule we apply to ourselves, and often to accept as matters of sober fact what they have introduced as poetical imagery. For example, much that we are told of the Israelites may be plain, historical, but noble deeds, sung into the poetry of a miracle. Moses appears before Pharoah with a petition written on a scroll of papyrus, wound upon a staff or rod; he lays this before the king, demanding the liberation of his countrymen. He has cast his rod before Pharoah, and it has become a serpent. The king calls a counsel of his wise men, and they each prepare an answer, and then present their written statements, scrolls wound on rods, but none of them can withstand the force of Moses' argument, and the result is thus described: "They cast down every man his rod, and they became serpents, but Aaron's rod swallowed up their rods."

Let us now, with a little of that spirit exercised by the ancients, search in this pillar of cloud for those golden threads of miracle that are there, as in every object in nature, interwoven with the purely material substance.

The object of the pillar of cloud and of fire was that the people might "go by day and by night." But they could not do so continually, for they were often in want of rest. Our pillar of cloud is raised also that the people may go by day and by night, but without exertion on their part, and even while they rest, for their floating tabernacles are pitched on eagle's wings, and while the sleeping pilgrim's heaving breast completes one breath, he and his couch are borne one hundred feet through ocean billows, split by an iron wedge a thousand tons in weight, whose speed exceeds a thousand feet per minute. Whence comes this power? What is the secret of that altar service whose incense is the pillar of cloud, that which propels steamers on sea, trains on land; which pumps and grinds, and spins and weaves, and by the spirit of fire and water everywhere makes man omnipotent? It is a power proceeding from combustion.

Combustion is an intensely active chemical union of two substances, evolving light and heat. The union is almost wholly that of oxygen with carbon, or with hydrogen. The materials of combustion cannot be only one of the substances, to the exclusion of the others, but both are equally the fuel of combustion. Coal gas burns by uniting with the oxygen of the atmosphere; but let a gas burner project into a gasometer, and through it force atmospheric air, we then find that atmospheric air can be burnt in the atmosphere of hydrogen just the same as the hydrogen was burnt in the atmospheric air. The coal gas and the oxygen are therefore both equally the fuel of the flame. In our furnaces the fuel is coal and atmospheric air; the coal contains ashes, and the air contains nitrogen, neither of which yields us heat, but in the form we find them coal and air are the fuel.

Coals are so dirty, and smoke so often a nuisance, and the coal strata are buried so deep in the earth, we may therefore ask could not something better have been done by an all-powerful Being, whose object was the comfort and dignity of man. Can we not ourselves suggest an alternative that might have been more acceptable to us. Gunpowder is one of man's inventions for stored power; how does it compare with coal, and would it not have been better to have prepared gunpowder in some safe form, but retaining its immense force instead of those beds of coal? What is the value of gunpowder as an available power for the service of man? One pound of gunpowder will give an initial velocity of about 1,600 feet per second to a ball weighing 3 pounds. To acquire this velocity by the action of gravitation, a body would require to fall* from a height of forty thousand feet. The work in one pound of gunpowder is therefore equal to the work of raising three pounds to the height of 40,000 feet, or one pound raised 120,000 feet. Supposing it were practicable to use the full explosive force of gunpowder in our engines, shooting the piston from end to end of the cylinder a hundred times a minute without loss of power more than is lost when it is used for artillery, it would require† sixteen and a-half pounds of gunpowder per hour to produce one indicated horse-power. But in modern marine engines two and a half pounds of coal give one indicated horse-power for one hour. If gunpowder could be used, the steamer that now takes in one thousand tons of coal for the voyage would then require six thousand tons of gunpowder fuel. Ocean steam navigation would then be quite impracticable, and He who speaks to us from the pillar of cloud tells us of something far better for man than gunpowder fuel.‡

$$* \frac{1600 \times 1600}{64} = 40{,}000.$$

$$† \frac{33{,}000 \times 60}{120{,}000} = 16\tfrac{1}{2}.$$

‡ Gunpowder is used for pile-driving in the United States. An inverted cannon of great weight plays up and down on the head of the pile. The cannon is raised and a cartridge thrown in on the pile-head; the cannon falls, and the heat of compression of the air ignites the powder; the cannon is shot up free to fall again the instant its momentum is lost; at each lift a cartridge is thrown in, and the strokes are repeated with great rapidity. The mere work of lifting the cannon is expensive as compared with steam power, but the rapidity of the operation, and the reduced cost of plant, seem to counterbalance that consideration. The pile does not require to be hooped, as the cannon never strikes it; it is driven by sheer pressure coming on it gradually, the powder always igniting before the cannon strikes the pile. This duration of great pressure is more effective in pile-driving than is the impulse of a blow, and here gunpowder beats steam or coal, not by its inherent power, but by the greater economy in its application.

and it leads us also to judge the ancient races of men by the rule we apply to ourselves, and often to accept as matters of sober fact what they have introduced as poetical imagery. For example, much that we are told of the Israelites may be plain, historical, but noble deeds, sung into the poetry of a miracle. Moses appears before Pharoah with a petition written on a scroll of papyrus, wound upon a staff or rod; he lays this before the king, demanding the liberation of his countrymen. He has cast his rod before Pharoah, and it has become a serpent. The king calls a counsel of his wise men, and they each prepare an answer, and then present their written statements, scrolls wound on rods, but none of them can withstand the force of Moses' argument, and the result is thus described: "They cast down every man his rod, and they became serpents, but Aaron's rod swallowed up their rods."

Let us now, with a little of that spirit exercised by the ancients, search in this pillar of cloud for those golden threads of miracle that are there, as in every object in nature, interwoven with the purely material substance.

The object of the pillar of cloud and of fire was that the people might "go by day and by night." But they could not do so continually, for they were often in want of rest. Our pillar of cloud is raised also that the people may go by day and by night, but without exertion on their part, and even while they rest, for their floating tabernacles are pitched on eagle's wings, and while the sleeping pilgrim's heaving breast completes one breath, he and his couch are borne one hundred feet through ocean billows, split by an iron wedge a thousand tons in weight, whose speed exceeds a thousand feet per minute. Whence comes this power? What is the secret of that altar service whose incense is the pillar of cloud, that which propels steamers on sea, trains on land; which pumps and grinds, and spins and weaves, and by the spirit of fire and water everywhere makes man omnipotent? It is a power proceeding from combustion.

Combustion is an intensely active chemical union of two substances, evolving light and heat. The union is almost wholly that of oxygen with carbon, or with hydrogen. The materials of combustion cannot be only one of the substances, to the exclusion of the others, but both are equally the fuel of combustion. Coal gas burns by uniting with the oxygen of the atmosphere; but let a gas burner project into a gasometer, and through it force atmospheric air, we then find that atmospheric air can be burnt in the atmosphere of hydrogen just the same as the hydrogen was burnt in the atmospheric air. The coal gas and the oxygen are therefore both equally the fuel of the flame. In our furnaces the fuel is coal and atmospheric air; the coal contains ashes, and the air contains nitrogen, neither of which yields us heat, but in the form we find them coal and air are the fuel.

Coals are so dirty, and smoke so often a nuisance, and the coal strata are buried so deep in the earth, we may therefore ask could not something better have been done by an all-powerful Being, whose object was the comfort and dignity of man. Can we not ourselves suggest an alternative that might have been more acceptable to us. Gunpowder is one of man's inventions for stored power; how does it compare with coal, and would it not have been better to have prepared gunpowder in some safe form, but retaining its immense force instead of those beds of coal? What is the value of gunpowder as an available power for the service of man? One pound of gunpowder will give an initial velocity of about 1,600 feet per second to a ball weighing 8 pounds. To acquire this velocity by the action of gravitation, a body would require to fall* from a height of forty thousand feet. The work in one pound of gunpowder is therefore equal to the work of raising three pounds to the height of 40,000 feet, or one pound raised 120,000 feet. Supposing it were practicable to use the full explosive force of gunpowder in our engines, shooting the piston from end to end of the cylinder a hundred times a minute without loss of power more than is lost when it is used for artillery, it would require† sixteen and a-half pounds of gunpowder per hour to produce one indicated horse-power. But in modern marine engines two and a half pounds of coal give one indicated horse-power for one hour. If gunpowder could be used, the steamer that now takes in one thousand tons of coal for the voyage would then require six thousand tons of gunpowder fuel. Ocean steam navigation would then be quite impracticable, and He who speaks to us from the pillar of cloud tells us of something far better for man than gunpowder fuel.‡

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* $\frac{1600 \times 1600}{64} = 40{,}000.$

† $\frac{33{,}000 \times 60}{120{,}000} = 16\frac{1}{2}.$

‡ Gunpowder is used for pile-driving in the United States. An inverted cannon of great weight plays up and down on the head of the pile. The cannon is raised and a cartridge thrown in on the pile-head; the cannon falls, and the heat of compression of the air ignites the powder; the cannon is shot up free to fall again the instant its momentum is lost; at each lift a cartridge is thrown in, and the strokes are repeated with great rapidity. The mere work of lifting the cannon is expensive as compared with steam power, but the rapidity of the operation, and the reduced cost of plant, seem to counterbalance that consideration. The pile does not require to be hooped, as the cannon never strikes it; it is driven by sheer pressure coming on it gradually, the powder always igniting before the cannon strikes the pile. This duration of great pressure is more effective in pile-driving than is the impulse of a blow, and here gunpowder beats steam or coal, not by its inherent power, but by the greater economy in its application.

We have already remarked that the oxygen with the carbon or the hydrogen is equally an essential part of the fuel of combustion, and that the form in which we find our fuel is atmospheric air and coal. The difference between gunpowder or other explosives and ordinary solid fuels is that the latter contain only one of the two substances that are to be united in combustion, whereas the former contains in intimate mixture all the materials to be united in combustion. The former can only burn as oxygen is supplied to it, the latter contains all the oxygen it requires, and is therefore independent of the atmosphere, and will even explode under water. Is it the result of an accident that we have the carbon and the hydrogen in the blocks, and the oxygen in the form of air, or is there not a meaning in the arrangement, such an evident spirit of goodness towards us that whatever is noble in our thoughts rises up in grateful appreciation and loving worship of this Spirit of Good or this God Spirit that is therein revealed to us, and who speaks to us from every pillar of cloud.

Let us suppose the arrangement reversed, that compressed oxygen and nitrogen formed our coal beds, and that we had an atmosphere of carburetted hydrogen or of coal dust. Viewed altogether apart from any consideration of whether this change of air would be agreeable to us, how would it fare with our steamships. The steamers now requiring one thousand tons of coal would then require twelve thousand tons of solid fuel, and even if pure solid oxygen could be obtained and used with safety, the weight required would be 3,300 tons to do the same work as is now done by 1,000 tons of coal.

But when we take the oxygen as we find it in the atmosphere in mechanical mixture with nitrogen, so diluted that its injuriously intense action is rendered innocuous, we find that the fuel of our steam boilers is practically 50 pounds weight per indicated horse-power per hour, 50 pounds weight of smoke per hour per indicated horse-power.

Look at the funnel of that ocean steamer; it is $8\frac{1}{2}$ feet in diameter, and one ton a minute of burnt fuel, coal and air, pours from it with a velocity of ten knots per hour, or one thousand feet per minute. But a ton of fuel per minute, how could such a quantity be carried by the steamer? It is not carried. Our friend, whose voice speaks from the pillar of cloud, separated the materials of combustion for us millions of years ago; He laid up for us only the essence of fuel for long voyages, on the same principle as, but with greater success than the essence of meat is prepared now. Five per cent. only of the gross weight of the fuel is thus preserved, and this alone has to be carried as fuel in the bunkers in the form of coal, the other 95 per cent. of the fuel is delivered free on board by our friend who speaks from the pillar of cloud, without freight at any part of the Atlantic. The vessel does not require to

stop or lay to to take it on board, and the finest dress of any of the lady passengers will not be soiled by its dust, for it comes on board in the form of pure, fresh air, it finds out the way down the hatches to the stoke-hole without any direction or assistance, although it has never been on board the vessel before, and in about ten seconds of time it is out again at the top of the funnel—it has done its work quietly and well. A divorce effected millions of years ago has in these few seconds being cancelled, and the parties have been reunited, and are now rushing out on their marriage trip at ten knots an hour. Not very like a wedding you will say, for the hue of the procession is very sombre. But their gay robes are packed up, that is all, for assuredly they have with them almost all the bright dyes admired by the ladies of the present day, they are all amongst the unconsumed hydro-carbon products in that smoke. The blue, and the green, and the red of plants and flowers are all there, and you cannot say for certain but that some day you may admire the hues of a beautiful flower, whose brightest spot of colour may be now an atom of smut in the blackest of that curling smoke.

As a brass founder uses a magnet to find the atoms of iron in a heap of brass dust, so are the myriads of green leaves in every forest, waving like magnet searchers in the atmosphere continually fishing for the molecules of carbonic acid gas. Using the word pound in an infinitely diminutive sense, we may describe the searching process thus—the wind that stirs the leaves is a stream of atoms of nitrogen and oxygen, they come six hundred sixteen-pounders of oxygen with twenty-three hundred fourteen-pounders of nitrogen, and then one forty-four pounder of carbonic acid gas, and that one is seized by the living leaf while all the rest pass by. The leaves of plants, and flowers, and trees, are just the opposite of a furnace, they abstract carbonic acid gas from the atmosphere, and each leaf holds up its captive atoms to the sun, and from that seat of power the same friend who speaks from the pillar of cloud, using as an instrument a ray of light ninety-five millions of miles in length, picks out the oxygen from the carbon in each molecule of the gas, liberates the oxygen for the health of man and beast, and imprisons the carbon for the good of the plant. This is a feat which man has been unable to accomplish in any single instance, by all the contrivances of the laboratory, or by the heat of the electric current, he has not succeeded in separating even one molecule of carbonic acid gas into its constituent atoms of carbon and oxygen. When we consider that not only our happiness, but our very existence depends upon this separation being effected, and that our friend who speaks from the pillar of cloud alone can do it, and that He is continually at work, operating with millions of millions of needles of light, each ninety-five millions of miles in length, picking these carbonic acid knots for us with one hand, while he keeps turning the world round with the other, to bring

in succession every leaf of every plant on the surface of the earth under the points of these magic, sunbeam needles, do we not feel that we could fall down and worship Him? And that if we are to cast off our shoes wherever there is holy ground, we shall never have shoes on our feet again, for His presence sanctifies every spot.

"Canst thou by searching find out God, canst thou find out the Almighty unto perfection?" The material universe is a dissected puzzle. Beginning with the pillar of cloud, we have found therein the seams of coal, the forests of a million years ago to dovetail as a beautiful fit with the atmosphere of the present day, and every leaf of the forest to dovetail into the atmosphere, and that man dovetails into them all. We have been searching for the Almighty, we hold up so much of the puzzle as we have put together, and looking at it say:—

"Lo, these are parts of His ways, but how little a portion is heard of Him; but the thunder of His power, who can understand."

FIJI.—BRITISH GOVERNMENT.—We have particulars of a very curious case from Fiji. A British ship arrived at Fiji, and the master got into debt. The owner hearing nothing of the ship sent his brother to look after her. The brother superseded the master, and was proceeded against and imprisoned for articles supplied to the original master. On being imprisoned for three months the brother brought an action. He obtained a verdict with heavy damages awarded by a Court and jury. The appeal from this was to the same Court *without* a jury, who reversed the decision. Thereupon, the brother's personal property was seized and sold. After the Fiji Courts had thus settled the matter, a Naval Court was held, which found that instead of the ship being indebted to the former master, the former master was heavily in debt to the ship. The *Government* of Fiji have, by their action, sold the ship and the personal property of the owner's brother, and have ruined the owner for a claim that never had any existence in fact. It is time that the so-called Fijian Government is looked after.

PUNISHMENT OF CHINESE WRECKERS.—The brig *Spartan*, of Sydney, N.S.W., was stranded and became a total wreck on the western coast of Formosa, on the 19th September, 1872, and the property was plundered on the beach much in the same way that robberies were committed on our own coast at the recent wrecks of the *Royal Adelaide* and *Kinsale*. The Chinese authorities sent to the scene of the wreck a vessel named the *Chanshing*, and much judgment and energy were displayed by Sub-lieutenant *Ching yii*, her commanding officer. Several of the wreckers were severely flogged, and three were publicly beheaded.

NAVY (BOYS, &c.).

RETURN to an Order of the Honourable the House of Commons, dated 1 August, 1872;—*for*, Return "showing the Number of First Class Boys, Second Class Boys, *bonâ fide* Seamen, Coast Guard Fleet Men, &c., who were Borne, Rated, Entered, or who Left the Service, during the Year 1871-72, showing also the Number of Re-entries of *bonâ fide* Seamen (in continuation of Parliamentary Paper, No. 123, of the present Session)."—Admiralty, 7 August, 1872.—T. JAMES, *Pro* Chief Clerk.

		1871-72.	1st April 1872.
1.	Number of First Class Boys entered *for the first time* on board Her Majesty's Ships during the year 1871-72.	137	—
2.	Number of Second Class Boys entered *for the first time* on board Her Majesty's Ships during the year 1871-72, distinguishing those entered in Training Ships and First Reserve Ships—		
	In Harbour Ships (None in Sea-going Ships):		
	For Service in such Ships ... 13		
	For Transfer to Training Ships ... 1,198		
	In Training Ships 1,535		
	In First Reserve Ships:		
	For Transfer to Training Ships... 292		
	—	3,038	
3.	Number of Boys who left the Service from all causes during the year 1871-72:—		
	By purchase 14		
	Invalided 192		
	Died 41		
	Deserted 209		
	Disgraced 4		
	Objectionable 9		
	Other causes 34		
	—	503	—
4.	Number of First Class Boys in Her Majesty's Service on 1st April of the year 1872 ...	—	4,099
5.	Number of Second Class Boys in Her Majesty's Service on 1st April of the year 1872, distinguishing those that were in Training Ships from those that were in other Ships:—		

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By purchase 14		
Invalided 192		
Died 41		
Deserted 209		
Disgraced 4		
Objectionable 9		
Other causes 34		
—	503	—
4. Number of First Class Boys in Her Majesty's Service on 1st April of the year 1872 ...	—	4,099
5. Number of Second Class Boys in Her Majesty's Service on 1st April of the year 1872, distinguishing those that were in Training Ships from those that were in other Ships:—		

		1871-72.	1st April 1872.
In all Ships except Training Ships	47		
In Training Ships	3,381		
	—	—	3,428
6. Number of *bonâ fide* Seamen who were rated from Boys during the year 1871-72		2,075	—
7. Number of *bonâ fide* Seamen (including 103 Pensioners) who entered the Royal Navy from the Shore, Merchant, or other Service, during the year 1871-72 :—			
First Entries		169	—
Re-Entries		845	—
8. Number of *bonâ fide* Seamen serving on the 1st day of April of the year 1872, exclusive of Pensioners on the books of Her Majesty's Ships, and Coast-Guard Men on Shore, and exclusive also of *bonâ fide* Seamen serving in Indian Troop Ships		—	17,785
9. Number of *bonâ fide* Seamen serving in Indian Troop Ships		—	453
10. Total Number of *bonâ fide* Seamen serving in the Fleet (including Indian Troop Ships), per Return made up on 1st November, 1872, according to the latest information received in office ...		—	18,330
11. Number of Coast Guard Fleet Men on Shore (*bona fide* Seamen) on the 1st day of April of the year 1872		—	3,733
12. Number of *bona fide* Seamen (including 18 Pensioners) who have left the Service from all causes during the year 1871-72 :—			
By Purchase	49		
Invalided	660		
Died	145		
Deserted	506		
Disgraced	5		
Pensioned for long service ...	287		
Continuous Service engagements expired	897		
Objectionable	25		
Coast Guard on Shore	190		
*Other causes	200		
	—	2,464	—

*The Head "Other Causes," includes Men discharged to the Shore on their Ships being paid off, or at any other time, "by request," and for "incompetency."

H. WALKER,
Accountant-General and Comptroller of Navy Pay.

CORRESPONDENCE.

NAVAL RESERVES.

To the Editor of the Nautical Magazine.

18, Amersham Vale, New Cross Road, S.E.
April 2, 1873.

SIR,—I have read with much interest the article in the February *Nautical* on "The Royal Navy and Royal Naval Reserves." One very important movement was, however, overlooked, which surprised me, considering the prominence given to the subject lately in all the daily papers. I refer to the "Royal Naval Artillery Volunteers," a corps that has been for some time in active working. The body is composed exclusively of yachting men, and the members are, of course, all gentlemen by birth and education. The original starting of the movement is due to Mr. Boom, a retired army officer, who has worked most zealously to make his scheme a practically useful one, and as the result shows he has succeeded. The corps is commanded by Thomas Brassey, Esq., M.P., whose experience as a yachtsman, and whose interest in all naval matters, makes him the man most suited to command a movement of this description. It is proposed to enrol a sufficient number of gentlemen in all the principal ports, to man as many gunboats as may be considered sufficient to guard that port, and it is evident that the yachting men of England would be quite sufficient to effect this object.

In a movement of this description it would be useless to enrol *anybody*, that is those who have never been to sea, and who do not know the hard work that will be required of them when afloat. Many have hinted that it is a disgrace for a gentleman of position to go about dressed in the uniform of a common sailor. However, the corps numbers among its members the son of an ex-cabinet minister, which is sufficient proof that a true gentleman is not ashamed to don any dress when called upon to do so in the defence of his country. Another member is a retired Peninsular and Oriental officer; all the members have, in fact, had more or less experience afloat, and are thoroughly acquainted with the duties that will be required of them. They have gone through a

course of heavy drilling in gun, cutlass, and rifle, during the last four or five months, and when I add that many men travel some twenty or thirty miles to Her Majesty's ship *President*, in the West India Docks, twice and sometimes three times a week, I think no more convincing proof could be given that the men are sincere in what they have undertaken to do. The London corps now consists of some seventy or eighty men. They have already gone through one important trial—viz., that of an inspection before Admiral Tarleton (a member of the Board of Admiralty). The inspection took place on the 18th January. Several naval officers were on board to view the proceedings. One of them said that had he not known the facts of the case, he should have thought he was watching the movements of a first-class man-of-war's gun's crew. The admiral in a very kind speech to the men expressed his thanks and sincere pleasure in what he had seen on board, and he also said that he should take the first opportunity of expressing to Mr. Goschen the progress they had made in so short a time. The members after this dined together at the "Albion," in Aldersgate Street, where Mr. Brassey made an effective speech. I must not omit to state that Liverpool has also a corps of the same description, numbering about forty men, five of whom came to London on this occasion to represent their corps. I trust, Mr. Editor, that you will acknowledge the importance of this movement. As regards expense, *the members bear every expense themselves*, even when afloat, so that a reserve of this description cannot add much to the expense of our naval armament. One great feature in this volunteer movement is the fact that no individual could join for the sake of donning a showy uniform. The uniform is in itself significant of *work*, and it is also advisable to be very careful *who* are enrolled, as it is obvious that any individual who would think it degrading to perform the work that he would be called upon to do, would be a very objectionable party, and would only be in the way of those who are earnest in their work. Trusting that you will give publicity to a movement that (carried on in such good faith) cannot fail to succeed.—I have the honour to be, Sir, faithfully yours,

C. F. F.

[We are much pleased to insert the above letter, and we almost owe an apology to Mr. Boom for not having before this referred to Mr. Brassey's corps of "Royal Naval Artillery Volunteers," whose "members are all gentlemen by birth and education." All honour is due to these gentlemen in London, and we trust that their example may be followed by gentlemen elsewhere. To give up the pleasures of the domestic hearth, the opera, the ball-room, and domestic gatherings, and to don the garb of seamen, and therein to do hard and dirty work, are indeed sacrifices that English gentlemen alone would make, and that alone bear evidence

of "backbone" in our upper classes. We desire to see these amateurs taking an active and an intelligent interest in their work, for we believe as we stated in our leader for February, that a few of them in Parliament would be an unalloyed good for the country. We are in hopes of seeing "Admiral" Brassey occupy, in the House, the same position as regards naval volunteers that Lord Elcho does as regards other volunteers, and our pen and pages are always at his service. And now one word, much as we admire Mr. Brassey's corps, we hope that it is not the corps promised by Mr. Goschen, but is something, a little surprise we will say, in addition. We look to see enrolled in the second-class reserve, seamen who live by the sea, our noble fisherman whose sea legs are on, and whose acquaintance with the sea has been obtained by years of patient toil under the most trying of circumstances, the winning of their daily bread: men whe do not need to go afloat to learn their duties; but who can learn all they do not not know, in a shed or battery near to their homes. We must not stop short of this.]

"HIPPOGRIFFE SHOAL."

To the Editor of the Nautical Magazine.

Hydrographic Department, Admiralty, S.W.,
11th February, 1873.

DEAR SIR,—My attention has been directed to a letter in your February number, referring to the Hippogriffe Shoal.

It may be useful to your readers to be informed that this shoal has not been expunged from the British *Admiralty* charts.

The particulars respecting it will be found in the "China Sea Directory," vol. i., p. 100.—Your's truly,

RT. HOSKYN, Captain R.N.,
Superintendent of Charts.

HIPPOGRIFFE SHOAL.—In our February number, *Mr. D. Willes Howes*, Inspector to New York Underwriters, called attention to the fact that the *Hippogriffe Shoal* has been expunged from British charts. We find, from Captain Hoskyn's letter, that on reference to the charts and sailing directions published by the Hydrographic Department of the Admiralty, the "Hippogriffe" is still marked on the one, and referred to in the other. We however thank Mr. Howes for calling attention to the subject, as it tends to show how much may be lost if shipowners buy cheap and incorrect charts.

course of heavy drilling in gun, cutlass, and rifle, during the last four or five months, and when I add that many men travel some twenty or thirty miles to Her Majesty's ship *President*, in the West India Docks, twice and sometimes three times a week, I think no more convincing proof could be given that the men are sincere in what they have undertaken to do. The London corps now consists of some seventy or eighty men. They have already gone through one important trial—viz., that of an inspection before Admiral Tarleton (a member of the Board of Admiralty). The inspection took place on the 18th January. Several naval officers were on board to view the proceedings. One of them said that had he not known the facts of the case, he should have thought he was watching the movements of a first-class man-of-war's gun's crew. The admiral in a very kind speech to the men expressed his thanks and sincere pleasure in what he had seen on board, and he also said that he should take the first opportunity of expressing to Mr. Goschen the progress they had made in so short a time. The members after this dined together at the "Albion," in Aldersgate Street, where Mr. Brassey made an effective speech. I must not omit to state that Liverpool has also a corps of the same description, numbering about forty men, five of whom came to London on this occasion to represent their corps. I trust, Mr. Editor, that you will acknowledge the importance of this movement. As regards expense, *the members bear every expense themselves*, even when afloat, so that a reserve of this description cannot add much to the expense of our naval armament. One great feature in this volunteer movement is the fact that no individual could join for the sake of donning a showy uniform. The uniform is in itself significant of *work*, and it is also advisable to be very careful *who* are enrolled, as it is obvious that any individual who would think it degrading to perform the work that he would be called upon to do, would be a very objectionable party, and would only be in the way of those who are earnest in their work. Trusting that you will give publicity to a movement that (carried on in such good faith) cannot fail to succeed.—I have the honour to be, Sir, faithfully yours,

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RT. HOSKYN, Captain R.N.,
Superintendent of Charts.

HIPPOGRIFFE SHOAL.—In our February number, *Mr. D. Willes Howes*, Inspector to New York Underwriters, called attention to the fact that the *Hippogriffe Shoal* has been expunged from British charts. We find, from Captain Hoskyn's letter, that on reference to the charts and sailing directions published by the Hydrographic Department of the Admiralty, the "Hippogriffe" is still marked on the one, and referred to in the other. We however thank Mr. Howes for calling attention to the subject, as it tends to show how much may be lost if shipowners buy cheap and incorrect charts.

SOCIETIES, MEETINGS, &c.

Society of Arts.

A paper was read "On the Ships of the Channel Passage," by Lieut.-Colonel Strange, F.R.S. Admiral Ommaney, R.N., occupied the chair. Several handsome models of proposed Channel steamers were exhibited, and a diagram of Mr. Bessemer's saloon boat was hung on the wall. After a brief introduction by the chairman, Lieutenant-Colonel Strange proceeded to read a paper on the above subject, in which he said that it needed little persuasion on his part to show that there was room for improvement in their present means of crossing the Channel. The motions which produced sea-sickness were principally of two kinds, angular and rectilinear. The angular motions were—1, pitching; 2, rolling; 3, horizontal or azimuthal swaying. The rectilinear motions were—4, the longitudinal advance of the ship on her course; 5, lateral drifting; 6, upward and downward motion of translation. But besides these there were other motions, such as temporary vibration, caused by the concussion of the waves and the continuous tremor caused by the working of the engines. Colonel Strange then proceeded to deal with these various motions, and said that no proposal had yet been made for getting rid of the vertical translatory motions of ships, nor was it conceivable how it was to be done. With regard to Mr. Sedley's plan for crossing the Channel (a model of which was on the table), he believed that its basis was identical with that of Mr. Dicey's, and he understood that these two gentleman had entered into an alliance. In respect to Mr. Mackie's plan, he belived that gentleman proposed to reduce the motion of the ship more by her dimensions than by any peculiarity of form. Captain Dicey's arrangement for producing steadiness of motion was then described by Colonel Strange, who also, having described Mr. Bessemer's plan, said that both Captain Dicey and Mr. Bessemer seemed fully alive to the necessity for furnishing the thorough ventillation, protection from weather, and commodious accommodation which large ships were so well suited to provide. It was difficult to institute a comparison between two arrangements differing so completely in principle, but he thought that it would be best to leave their relative merits and demerits to be brought out by a discussion for which he had endeavoured as impartially as possible to provide the materials. Mr. Mackie then proceeded to describe his invention. He claimed for his vessel ocean-going qualities, and said that it was admirable for carrying large batteries and resisting torpedoes. Mr. Bessemer also gave a detailed account of his invention. For our own

part we do not believe that even Mr. Bessemer's plan will lessen the motion that produces sea-sickness. The "pitching" and the "rolling" are trying to the stomach, but the motion that really causes sea-sickness is neither of these. It is the absolute rise and fall of the whole ship; rising, and, as it were, leaving the stomach below, then falling and leaving the stomach above. We shall see how far our ideas on this are corroborated by experience in the ship Mr. Reed is to build, and hope to revert to them at some future time.

Royal United Service Institution.

At the meeting on 8rd February, Admiral George Elliot in the chair, a paper was read by Mr. W. Stirling Lacon "On Lowering Boats at Sea." The author reviewed some of the prominent incidents of the past ten years, and proposed a plan of his own as a contribution towards a remedy of the evils which are still permitted to exist, in the Navy as well as in the Merchant Service. The proposition was to this effect:—Eyebolts are to be driven through the keel at the bow and stern, and clinched; chains, with rope pennants, are to be attached to these by shackles; at the outer end of each davit is an eyebolt for hooking on the tackles, and in the davits three sheaves one over the other. On board ship is a roller, on three drums, attached to each other by an iron bar. A rope is coiled round the centre drum, and the lead lines attached to the chains are carried over the two others. One man at the centre rope lowers, and being on board ship can watch the opportune moment to drop the boat into the water. If the ship has way on, the boat will drag away the chains into the water, or they can be unshackled and left to the ship. The author's proposal was closely criticised by many of the very able Naval Officers present, and was met with objections rather than praise. On the same evening two other papers were submitted to the meeting—"On Steering Screws," by Captain G. W. Bremner, and "On New Surveying Instruments," by Major Hutchinson, B.A. Two handsome models of Captian Bremner's screws were exhibited, one of which played upon a bath of water to demonstrate the perfection with which a long screw steamship may by means of this simple, yet useful, invention, be turned rapidly in her own length, with or without forward steerage way. In the course of his lecture, Captain Bremner said:—"My invention, which I call a Steam Steering Screw, has for its object to effect the turning, manœuvring, and revolving of a ship, and it claims to do that without the necessity of headway. It will be readily conceded that the greatly increased length and dimensions of modern-built ships, especially those belonging to Her Majesty's Navy, require a mechanism more ready

and more efficacious than the old-fashioned rudder to perform the evolutions required of them. I trust to be able to demonstrate, by the aid of the working model, that my invention would revolve a ship completely without, as hitherto, the necessity of steerage way, which I believe no mechanical appliance has hitherto been able to accomplish. I have confidence in asserting that the general adoption of this invention would tend to avoid distressing accidents, and thereby save life and property from destruction to an extent which it is impossible to estimate. There are other valuable advantages connected with this steering screw which I will indicate as briefly as possible. Among these is the power it gives of keeping a ship in position when hove to, or when compelled to go at a very slow speed, in heavy weather, and thus preventing her falling into the trough of the sea and eventually foundering, as is too frequently the case. But especially when applied to ships in narrow waters would this invention be valuable, and above all to vessels sailing through the Suez Canal. The traffic through the Canal, now the high road to India, is rapidly increasing. Owing to the tortuous nature of the channel, it has been found necessary to maintain a number of steam tugboats, which are employed in the sole occupation of turning the heads of vessels, this expedient being necessitated by the inability of the ships themselves to turn in the confined waterway open to them. This, of course, would be obviated were the invention spoken of generally adopted, and, consequently, a vast saving be effected both in time and in money. Besides this, if any accident should happen to the rudder of the vessel through grounding, or from any other cause, this screw would constitute a second rudder, and in case of need one by which the ship could be as readily steered as by the old one."

Royal Colonial Institute.

On Tuesday, the 4th February, the Duke of Manchester in the chair, a paper on the Marine and Fisheries of Canada was read by the Hon. J. G. Bourinot of the Canadian Senate. It stated that no country in the world possessed more admirable facilities for the prosecution of all branches of maritime enterprise than the Dominion of Canada. There were New Brunswick, Nova Scotia, and Newfoundland, while the eastern and western extremities of Canada are washed by two oceans, the one the road to Asia, the other to Europe. Nature had given to Canada a system of internal communications unrivalled even by the Republic on her borders. The St. Lawrence ran through a large portion of her most valuable and, at present, most populous territory, and carried to the ocean the tribute of the great lakes and noble rivers that water the provinces of Quebec and Ontario. By energetically availing themselves of

these natural advantages, the people of British North America have been able in the course of a few years to attain a commercial position which is most creditable to their industry and enterprise. The people who own this immense stretch of country—extending from ocean to ocean—are of the same races which, from time immemorial, have been famous for their achievements on the seas. They took as much pride as the men of Devon themselves in the records of Grenville, Gilbert, Frobisher, Raleigh, Drake, and all those gallant men whose names are so indissolubly associated with the maritime triumphs of the parent state, and with the history of discovery on the Continent of America. If there be an era in English history most interesting to Canadians, it is that Elizabethan age when England laid deep and firm the foundations of her maritime superiority, and her adventurous sons—above all, the sea-worthies of Devon—went forth to plant her flag in the ice-bound regions of the north, or on the islands and shores of the tropics. The result of the statesmanlike policy that the mother country within twenty or thirty years had adopted towards Canada, had not only tended to stimulate the energy and enterprise of the Canadian people, but had actually benefited the manufacturing and mercantile community of Great Britain, inasmuch as the provinces are now consumers of British merchandise to a far greater extent than would have been possible under the old system of monopolies and navigation laws. Since the repeal of the reciprocity treaty, and the disturbance of commerce and industry by the civil war, the fisheries have not been prosecuted to the extent that they were up to 1865; but as soon as the new treaty comes into force American fishermen will flock in larger numbers to the fishing grounds, and enter into the most active competition with our own people. The Minister of Marine and Fisheries in Canada calculates that the Americans employ between 800 and 1,100 vessels in our fisheries, and that their annual catch, chiefly within the three miles limit, may be valued at upwards of 8,000,000 dollars. It was safe to say, with all these facts before us, that the money value of the concessions made to the United States will be between 6,000,000 and 7,000,000 dollars Canadian money. The growth of the fishery interest of British North America had been steady during the past twelve years. In the men that sail the fishing fleets of Canada existed the elements of a very powerful marine. It may be estimated that the total strength which the fisheries employ throughout British North America is composed of some 75,000 men. On the energetic prosecution of the rich fisheries of this continent rested the very foundation of our national strength in the future.

Geographical.

February 10th.—Major-General Sir H. C. Rawlinson, K.C.B., President in the Chair.

A paper was read, "On Discoveries East of Spitzbergen and Approaches towards the North Pole on the Spitzbergen Meridians," by Mr. C. R. Markham, C.B.—The voyage of Barents, in 1596, was recapitulated and the honour claimed for him of having been the discoverer of Spitzbergen; but it was argued, contrary to the opinion of some writers, that Barents did not proceed up the eastern side of Spitzbergen, but up the western. Hudson was the next to visit these islands, in 1607, and he was followed in the succeeding years by a succession of whaling adventurers, under the auspices of the Muscovy Company. The most successful of these was Thomas Edge, who discovered and named many islands and inlets, of which a map was given in Purchas's Pilgrims, but which have been unjustly re-named since, on the erroneous supposition that they were new, by Dutch, German, and other voyagers. After a review of all that had been done, down to the Swedish Expeditions, and those of English private gentlemen, Birkbeck, Lamont, and Leigh Smith, in recent years, the author concluded that no ship had ever yet passed round the eastern side of the archipelago, against which the ice pressed all through the summer, whilst the western and northern shores were free between July and September. To the east and north-east of the islands he believed there was another extensive tract of land or group of islands yet remaining to be visited. He quoted Scoresby and others to show that there was no evidence of the existence of land to the north of the islands, and he believed there was no open sea in the height of summer, but that the loosened ice pressed away southward past Spitzbergen, even from the Pole itself, leaving only lanes and small spaces of open water. He maintained that it was not a route to be recommended for a national expedition making scientific investigations towards the Pole; but that Smith Sound, with its long lines of coast trending northwards, giving the safeguard of the land, was the best route.

Royal United Service Institution.

On Monday evening, the 17th February, Vice-Admiral Ryder in the chair, Commander Cyprian A. Bridge of H.M.S. *Cambridge*, read an able paper on "Fleet Evolutions and Naval Tactics." He considered that the great object of fleet evolutions was to lay the foundation of naval tactics, and that the smaller elements, such as the capabilities of each ship as a manœuvring unit, the possibility of manœuvring or handling collectively any aggregation of such units, the best formations and movements for preparation for battle and the like, should, in the first place, be

most carefully considered. Evolutions ought, the lecturer was of opinion, to be practised during peace. Up to the present time the naval authorities have only taken advantage of the annual assemblage of the mightiest fleets ever placed on the sea to execute a few dull manœuvres. From the summer cruises of our combined fleets, we ought to obtain the knowledge how to use our weapons with effect. Why should not some formation be taken and an advance made against targets placed to represent an enemy's line? Some estimate could thus be made of the value of bow-fire when advancing; some knowledge of the relative handiness of different formations for attack; how far smoke from guns or funnels would interfere with the maintenance of formations; which would be the best points for leaders, &c., &c. An animated discussion followed the reading of the paper, in which Captain Goodenough, R.N., suggested that the terminology to be employed in naval tactics should be carefully revised and made expressive and definite.

Royal Institution.

On Monday, the 17th February, Mr. R. H. Scott, director of the Meteorological Office, delivered a most interesting lecture at the Royal Institution, "On the Recent Progress in Weather Knowledge." The lecturer began by observing that advances had been made, during the last four years, towards entitling weather knowledge to rank amongst the sciences. An agitation has already commenced for the organisation of a system of telegraphic agricultural weather reports, in order that through the knowledge of the prospects of the harvest, the price of grain might be regulated. The veteran Maury is at the head of this movement, and the subject was mooted at the International Statistical Congress at St. Petersburg. Meanwhile, in this country, commencement was made last summer, of giving intelligence as to the probable growth of crops, by adding six inland stations to the list of those which furnished information for the daily weather report. The excessive rainfall of the past year was considered in connection with Köppen's recent work, "On the Sequence of the Non-periodic Variations of Weather," reference being made to the rule enunciated by him, that "the weather has a decided tendency to preserve its character"—*i. e.*, that if it has rained for nine or ten days in succession, the next day will be wet also in four cases out of five, the chance of a change decreasing (within certain limits) with the length of time for which the weather, from which the change is to take place, has lasted. The recent investigations in respect to storms and rainfall were dealt with at length, as were also those

relating to weather telegraphy and storm warnings. At the present time there is not a single European country, except Greece, which has not its own meteorological organisation. In most cases, telegraphic weather reports are published in the newspapers, whilst the example set by Le Verrier, in 1858, of the publication of lithographed bulletins, has been followed by the Meteorological Department in this country. Russia, also, issues such bulletins. For weather telegraphy on its grandest scale, however, we must cross the Atlantic. Under the direction of Brigadier-General Nugen, no less than three charts are issued every day from the chief signal office of the United States at Washington. This undertaking is rendered possible by the fact, that the whole organisation is military, while the tetegraphic system of the States is placed at the disposal of the signal office for a certain space of time every day. By this means, it is possible to publish the chart and the report, simultaneously, in all the principal cities of the States. Sea stations and floating observatories, the systems of forecasting weather, motions of storms, distribution and condensation of vapour over particular geographical regions, high and low barometric areas, and other matters of interest had notice in the lecture. Mr. Scott remarking that if it were possible to place the present Meteorological Office, with all its telegraphic facilities, on the west coast of Ireland, it might be fairly hoped to foretell five-sixths of the storms which strike this island. We are not without hope that we may shortly be enabled to reproduce this interesting paper *in extenso*.

THE SUEZ CANAL DUES.

The following is the judgment of the French Court :—

"It is the opinion of the Tribunal that the Suez Canal Company, by its resolution of the 4th March, 1872, declaring a modification of the tax to be levied as a special Navigation Duty on ships using the Suez Canal, is enterely in the wrong: That, in consequence, the tax to be paid by the plaintiffs as a special Navigation Duty remains fixed at 10f. per ton of capacity, according to the mode of measurement determined by the Ordonnance of 1837. The Tribunal certifies that the Compagnie des Messageries Maritimes has declared the new tax only to have been paid, reckoning from the 1st July, 1872, under constraint and under protest: The Suez Canal Company is, therefore, condemned to pay and return to the plaintiffs the excess of duty they have been forced to pay on their ships from the 1st July up to the present date, with interest as fixed by law; and, considering the well-known stability of the plaintiffs, must do so at once, and without the delay which might be obtained by appeal, and, further, to pay all the costs."

It will be seen from the above that "*Register*" and not "*Gross*" tonnage won the day, but the Leith Chamber of Commerce having concluded that in some way or other a letter from the Board of Trade to Mons. de Lesseps had prejudiced the case of the British shipowner, wrote to the Board of Trade for an explanation. This explanation was given by the Chief Secretary in November, 1872.

The following is the substance of an article in the *Naval and Military Gazette* thereupon:—

"A minister, speaking at a Lord Mayor's dinner, speaks really to the world at large, and a public department, addressing a Chamber of Commerce in like manner, speaks with a view to publication. In this sense, the Chief Secretary to the Board of Trade has addressed the Leith Chamber of Commerce on the subject of the Suez Canal dues, and in this sense the Leith Chamber have accepted that address and published it. For our purpose the facts may be briefly stated as follows:—1st—The Suez Canal Company are, by the terms of their Act of Concession, restricted to charging as a maximum the sum of ten francs on the 'ton of capacity' of the ship; 2nd—They took counsel's opinion, and were advised that 'ton of capacity' meant *gross tonnage;* 3rd—A great contention has long been waged, in this country, as to whether all ships—both sailing and steam—should pay dues on the gross tonnage, and the Board of Trade hold that gross tonnage is the correct standard of taxation for such cases as that of the Suez Canal; 4th—A question has been before the French Courts raising the interpretation to be put on the Act of Concession under which the Canal is worked. In March, 1872, the director of the Suez Canal Company addressed a letter to the Board of Trade, stating that the Company had adopted the gross tonnage as their basis of taxation, from July 1st, 1872, and ten francs per gross ton, and the Board of Trade acknowledged that letter, on April 8th, in the following terms:—'The Board of Trade are glad to find that the company have come to this decision, as the Board believed that the principle of charging the dues on the gross tonnage of all ships is correct.' If this letter was inadvertent—as the Board say it was—it would have been wise to have corrected it at an early moment. On the 18th of November, or after a lapse of upwards of seven months' further consideration, the Board of Trade have pointed out to the Leith Chamber of Commerce, in reply to their remonstrance, that 'whilst the letter of the 8th April expressed an opinion in favour of gross tonnage, as the standard of taxation in such cases as that of the Suez Canal, it did not directly express any opinion on the question now at issue in the French Courts.' The letter of the 8th of April, being from an English office, could have no bearing on the case. The French Court, before which the Board of Trade letter was pleaded

by the counsel for the Canal Company, saw this at once, and for that, and other cogent reasons, declined to accept it. The question before the French courts arose out of an attempt by the Canal Company to charge a French shipowning company according to the increased rate of dues. It is not likely that in litigation between two French companies, in a French court, a letter from an English office to the Canal Company, would be accepted as explaining the meaning of an Act of Concession made by the Ottoman Government to a French subject. The letter did no harm. In November the Board of Trade state that their letter of April 8th 'was inadvertently sent from the office, and was couched in terms to be regretted, since it had led Mons. de Lesseps to attribute to the Board of Trade opinions they do not entertain,' and after most careful consideration, and mature deliberation, and without the charge of imperfect information, or indiscretion, as was the case in April, the Board state in November, that they not only 'now entertain,' but that they 'have *long* entertained' the opinion that the gross tonnage is the fairest standard of taxation in such cases as that of the Suez Canal. The sum and substance of the whole is, that the Board of Trade did mean to say that gross tonnage is the right tonnage, and did *not* mean to say that ten francs is the correct charge. No private office, and no public department can be free from inadvertencies; in fact, looking to the enormous work of the Board of Trade, we can honestly congratulate the President on the small number of mistakes that happen there."

The contention of Mons. de Lesseps that a "ton" means weight and does not mean space, cannot for a moment be entertained; neither can the claim of France, that the French Consul or a French Court, is to have exclusive jurisdiction on questions arising between all shipowners and the Company.

A Convention is about to assemble at Constantinople, to go into the whole subject. This Convention, let us hope, will determine what a "ton" is, under the wording of the Concession; and will, let us also hope, do something more than that by going further, and in another direction—viz., towards the establishment of a Court that is to settle disputes and will settle them speedily, and towards the establishment of an International Commission to manage the Canal.

CLOSING OF GREEN'S SAILORS' HOME.

We regret to have to announce that the above institution, which has been for so many years a haven of refuge to "Jack ashore" has been closed by order of Mr. Britten, into whose hands the property has now fallen, through a decision of the Court of Chancery. This sad news will cause regret to many of our readers in both hemispheres. We are given to understand that the Messrs. Green, of Blackwall, have had nothing whatever to do with the closing of the Home, which is much against their wishes.

The Mercantile Marine Office, which transacts its business at the east end of the building, will not be closed, as the Board of Trade intend to retain possession of that portion of the Home which is now used as a Shipping Office, and to carry on the business as usual. We especially mention this fact, as owners, captains, pilots, and others, might think that the entire building was to be shut up.

It has been generally understood in the neighbourhood that "Green's Sailors' Home" was founded, and endowed in perpetuity, by the late Mr. Richard Green, for the benefit of the British tar; and that some £10,000, which has been added to year by year, was set aside, so that no difficulty about raising the necessary funds should ever have the effect of shutting the doors of the Institution upon the sailor; but the benevolent intention of the generous donor has been set aside by a court of law. The inheritor has closed the Home.

Chain Cables.—Martin's Patent.—We have seen a specimen link of a cable manufactured on the plan of Mr. Martin, the patentee of one of the lightest, best, and handiest anchors ever invented. The chief feature in the new cable is that the iron of which the links are to be made, is, when cut into lengths ready for the workmen, so cut, that the parts to be welded have a rectangular socket formed in them. Instead of two flat surfaces being welded together, two surfaces, each having a projection and a socket fitting into a corresponding socket and projection on the other surface, are brought together. This is best illustrated by likening the present joint to the hands laid open palm to palm, and the new joint to the hands, each with the fingers bent inwards, forming a hook for the other to hold on by. The inventor claims greater area for welding surfaces, and greater strength and homogeneousness. The cable made on this principle, with the joints of the link brought together and not welded at all, is, it is stated, able to bear the present statutory proof strain; and when welded is said to be able to bear ninety per cent. above the proof strain.

HYDROGRAPHIC.

MAGELLAN STRAIT TO GULF OF PENAS.—TIDES IN ENGLISH NARROWS. ON the 22nd of December, 1872, at the period of neap tides, H.M.S. *Zealous*, in her passage to the southward through the English Narrows, at about an hour before low water by the shore, was swept by the ebb tide from the southward on to a sunken rock with 17 feet, lying about 100 yards to the southward of an islet off the eastern shore;—the islet lies nearly half a mile south of Mid-channel island.

Mariners are therefore recommended, when proceeding through this part of the English Narrows, to keep on the western shore, and in steam vessels to regulate their speed in order to have their vessel fully under command; bearing in mind that the ebb tide sets strongly on the islet (near which the *Zealous* grounded) from the opposite side of the channel.

In the English Narrows, the flood and ebb streams are considered to run for about three-quarters of an hour after high or low water by the shore.

At the northern entrance of English Narrows the flood tide sets across the channel from the north-west point of Cavour island; care should therefore be taken when proceeding to the northward, to avoid being swept on to the shore of Loney island.

Mid-Channel Island.—Close to the south end of Mid-channel Island are detached rocks awash, and beyond these kelp extends for some distance.

BOARD OF TRADE.—Captain Digby Murray, who has seen active service in the Royal Navy, in the United States Mercantile Marine, and latterly, as commodore of the *White Star Line* of American steamers, has been appointed professional officer of the Marine Department of the Board of Trade, and Surveyor-General of steam ships. Sir William Walker, whom Captain Murray succeeds, was selected out of the employ of the late Mr. Green. It is only fair that his successor should be appointed from Liverpool. The Board of Trade is to be congratulated on having added to its staff an officer like Captain Murray, who is well acquainted with the requirements of modern ships, and whose experience has been gained in service in almost all parts of the globe, and in sailing as well as steam ships.

MONTHLY ABSTRACT OF NAUTICAL NOTICES.

No.	Place.	Subject.
45	Australia—Queensland—Wide Bay Bar.	Alteration in Channel.
46	Australia—New South Wales—Alla Dulla	Establishment of Harbour Light.
47	Newfoundland—East Coast—Greenspond—Funin Island	Establishment of a Light.
48	England—South Coast—Royal Sovereign Shoal	Alteration in Buoy.
49	Mediterranean—France—Aigues Mortes	Additional Harbour Light.
50	Adriatic—Dalmatia—Macarsca	Establishment of a Harbour Light.
51	Adriatic—Gruizza Island	Establishment of a Light.
52	Baltic—Oland Island—Kappel Point	Exhibition of the Light.
53	North Sea—Schelde River—Flushing	Establishment of a Harbour Light.
54	North Sea—Schelde River Entrance	Alteration in Buoys.
55	United States—Michigan Lake—Gibraltar	Establishment of a Light.
56	United States—Michigan Lake—Cleveland	Establishment of a Light.
57	England—East Coast—Inner Dowsing Shoal	Intended Establishment of a Light-vessel
58	Japan—Simonoseki Strait—Shirasu (Low Reef)	Establishment of a Light.
59	Linschoten Island—Kutsino Sima	Discovery of a Breaker near.
60	Linschoten Island—Vincennes Strait	Discovery of a Breaker in.
61	China—Yang-tsze-Kiang River—Blockhouse Shoal	Disappearance of Beacon.
62	United States—Gulf of Mexico—Mobile Point	Alteration in Light.
63	Black Sea—Kertch Strait	Establishment of Leading Lights.
64	Mediterranean—Spain—Barcelona	Alteration in Harbour Lights.
65	West Indies—Bahama Islands—Gun Cay	Intended Alteration in Light.
66	South America—West Coast—Guayaquil River Mandingo Point	Establishment of a Light.
67	South America—West Coast—Manta Bay	Establishment of Harbour Light.
68	Africa—East Coast—Bird Island	Alteration in Light.
69	Australia—Queensland—Burnett River	Establishment of Tidal Signals
70	United States—California—Reyes Point Light-house	Establishment of a Fog Signal.
71	North Sea—Jutland—Graa Deep	Establishment of a Light.
72	Baltic—Gulf of Dantzig—Hela Peninsula	Establishment of a Telegraph Station.
73	Australia—Queensland—Bustard Head	Alteration and Addition in Lights.

NAUTICAL NOTICES.

45.—Australia.—*Queensland.*—*Wide Bay Bar.*—The leading beacons on Inskip and Hook points now lead over the bar of Wide bay, southern entrance to Great Sandy strait, on a S.W. by S. ¼ S. bearing 8 fathoms at low water. Small vessels can pass through a middle channel which

has recently opened out, with 10 feet at low water, by keeping Baupal mountain just open of the high land on Great Sandy island. A pilot service is to be established at Hook point, and strangers are recommended not to attempt to enter Great Sandy strait by the Wide bay entrance without a pilot.

46.—AUSTRALIA.—*New South Wales.—Alla Dulla.*—A *fixed green* light, is now exhibited from a lighthouse on the pier at Alla Dulla harbour visible between the bearings S.W. ¼ W. and W. by N. ¼ N.; it is elevated 43 feet above high water, and in clear weather should be seen from a distance of 7 miles.

Note.—Vessels bound to Alla Dulla from the northward, will in clear weather, sight the light on a south-westerly bearing before losing sight of Cape St. George light: Vessels from the southward, will have to keep an offing until the light opens out clear of the land. To enter the port steer about W.S.W. for the light, keeping a good look out to avoid Sullivan reef, which generally breaks, and should be passed at a distance of 2 cables on the port hand.

47.—NEWFOUNDLAND.—*East Coast.—Greenspond.—Puffin Island.*—From the 1st March, 1873, a light will be exhibited on Puffin island, near the entrance of Greenspond harbour. The light is a *fixed red* light of the fourth order, visible seaward from N.E. by E. to S.W. by W. 55 feet above the sea, and should be seen 12 miles. The tower is attached to the keeper's dwelling, and both are built of granite. Position lat. 49° 8′ 37″ N., long. 53° 32′ 27″ W.

48.—ENGLAND.—*South Coast.—Royal Sovereign Shoal.*—A *bell* buoy painted in *black and white stripes*, and surmounted with a *staff and cage*, will shortly be placed in the position hitherto occupied by the spiral buoy with staff and globe, to the southward of the Royal Sovereign shoal.

49.—MEDITERRANEAN.—*France.—Aigues Mortes.*—A *fixed white* light is exhibited 33 feet above high water, from the head of the southern jetty; it should be seen 10 miles. Position, lat. 43° 32′ N., long. 4° 8′ E.

50.—ADRIATIC.—*Dalmatia.—Macarsca.*—A light is now exhibited from a lamp-post on the head of the mole. The light is a *fixed* light, showing *red* seaward and *white* towards the harbour; it is 20 feet above the sea, and should be seen 8 miles. Position, lat. 43° 17′ N., long. 17° 1′ E. The red light will be seen from the north-west, over the low neck of land uniting the peninsular of San Pietro to the main.

51.—ADRIATIC.—*Gruizza Island.*—A light is now exhibited from a tower on the island. The light is a *fixed red* light, of the fifth order, 56 feet above the sea, and should be seen 9 miles. The tower is at-

tached to the keeper's dwelling. Position, lat. 44° 24′ 30″ N., long. 14° 84′ 20″ E.

52.—Baltic.—*Oland Island.—Kappel Point.*—The light is a *flashing white* light, showing flashes of *four seconds* duration, with eclipses of *six seconds* duration; and in clear weather should be seen from a distance of 16 miles. Position, lat. 56° 49′ 20″ N., long. 16° 50′ 40″ E.

53.—North Sea.—*Schelde River.—Vlissingen (Flushing).*—A *fixed white* harbour light is now exhibited from a lantern 14 feet above high water, on the outer extremity of the western jetty.

54.—North Sea.—*Schelde River Entrance.*—The following alterations have been made in the buoys at the entrance of the Schelde river :—

The outer buoy of Wellingen channel is now a *beacon* buoy of the largest size.

A *black* beacon buoy has been placed on the south-west side of the Wandelaar bank, in 4¾ fathoms, with Uijtkerke just open of the west side of the westernmost high buildings in Blankenberge.

55.—United States.—*Lake Michigan.—Detroit River.*—On the opening of the navigation a *fixed white* light of the fourth order will be exhibited 49 feet above the river, in the village of Gibraltar, on the western side, and near the mouth of the river. It should be seen 12 miles. Approximate position, lat. 42° 5½′ N., long. 83° 11′ W.

56.—United States.—*Lake Michigan.—Cleveland.*—On the opening of the navigation a *fixed white* light of the third order will be exhibited on the hill in the city of Cleveland. It is 154 feet above the lake and should be seen 18 miles. Approximate position, lat. 41° 30′ N., long. 81° 40½′ W.

57.—England.—*East Coast.—Inner Dowsing Shoal.*—With a view of indicating the position of the Inner Dowsing shoal and facilitating the general navigation of the Eastern coast of England, it is intended on or about the 20th April, 1873, to place a light-vessel near the north end of the shoal, from which a *green revolving* light showing a flash *every twenty seconds* will be exhibited. Also, that further notice will be given when the vessel is in position.

58.—Japan.—*Simonoseki Strait.—Shirasu (Low reef).*—A temporary light is now exhibited from this reef, western entrance of Simonoseki strait. The light is a *fixed red* light, elevated 42 feet above the sea, and should be seen 10 miles. The lighthouse, a square wooden building, painted white, is on the southern end of the reef, and about one and a half miles south-westward from Ai-sima. Position, lat. 33° 59′ 30″ N., long. 130° 47′ 24″ E.

59.—Linschoten Island.—*Kutsino-sima.*—Captain W. T. Quayle, of the barque *Frances Henty*, observed breakers between 4 and 5 miles to the north-westward of Kutsino-sima. The breakers were about 2

cables in extent, and from bearings taken near them, the approximate position is in lat. 30° 7′ 45″ N., long. 129° 54′ E.

60.—Linschoten Island.—*Vincennes Strait.*—Heavy breakers are reported to have been seen on the south side of the strait by the ship *Malvern;* from it the south point of Tanega-sima (Karasaki) bore N. ¼ E., and the south point of Yakuno-sima, West. These bearings place the danger approximately in lat. 30° 14′ N., long. 130° 53½′ E.

Note.—Mariners should be cautious in reporting the existence of reefs in the neighbourhood of the Linschoten islands, as the Sailing Directions remark that strong tide rips are frequently met with in this locality, often resembling heavy breakers on reefs or shoals.

61.—China.—*Yang-tsze-Kiang River Entrance.*—*Blockhouse Shoal.*—The iron-screw-pile beacon has disappeared, and a *red* buoy, surmounted by a staff and cage, has been moored on the south-east extremity of the shoal in 10 feet water, with Kiutoan lighthouse bearing S.S.W ⅔ W., and Kiutoan small beacon W. by N. ¾ N.

62.—United States.—*Gulf of Mexico.*—*Mobile Point.*—The following alteration has been made in the light on Mobile point, east side of entrance to Mobile bay, viz.:—The present fixed white light has been replaced by a *fixed red* light of the fourth order, exhibited from a tower recently erected on the south-west bastion of Fort Morgan. It is 50 feet above the level of the sea, and should be seen 13 miles. The tower, 87 feet high, is painted black. Position, lat. 30° 18′ 45″ N., long. 88° 0′ 29″ W.

Directions.—Vessels drawing over 18 feet water may approach the light-house on the west side to one and a half cables. When in mid-channel, and Mobile point light bears E. by S., steer N. by W. clear of the buoy on the starboard hand, on the end of the Middle ground, to the anchorage at Lower Fleet, where there is about 3½ fathoms.

63.—Black Sea.—*Kertch Straits.*—The following alterations have been made in the lighting of Kertch strait. The sector of red light exhibited from the lighthouse at Cape Paul visible to the eastward has been discontinued. Two leading lights have been established in Ambélaki bay. 1. A *fixed red* light on the edge of the cliff at Kamish, 2½ cables to the southward of the Lazaretto. The light is 102 feet above the level of the sea, and should be seen 11 miles. Position, as given, lat. 45° 16′ 49″ N., long. 36° 26′ 15″ E. 2. A *fixed white* light at Tschurnbasch bearing W.S.W. distant 5 miles inland from the Kamish light; it is elevated 344 feet above the sea, and should be seen 21 miles. The lights in line bearing W.S.W. lead in the channel between the spit of the Tusla bank and the shoal of Ak-bournou.

64.—Mediterranean.—*Spain.*—*Barcelona.*—The extremity of the piers are now marked by temporary lights, *green* on the east pier head,

and *red* on the west. The lights are nearly 400 yards from each other, and vessels entering may approach either to about 70 yards. The lights should be seen 2 or 3 miles.

65.—West Indies.—*Great Bahama Bank.—Gun Cay.*—Notice is given that this light will be changed from a revolving white catoptric light to a *red revolving* dioptric light, attaining its greatest brilliancy as heretofore, *every minute and a half*, and that during the time the change is in progress, viz., in the months of April and May, 1873, a light of the same character as the present light, but of less power, will be exhibited; the temporary light will therefore not be seen from so great a distance.

66.—South America.—*Guayaquil River.—Puna Island.—Mandingo Point.*—A *fixed white* light, elevated 108 feet above the sea, and visible 10 miles, is now exhibited on this point half a mile east of Puna. Position, lat. 2° 44′ 30″ S., long. 79° 52′ 50″ W.

67.—South America.—*West Coast.—Manta Bay.*—A *fixed white* harbour light that should be seen 9 miles, is now exhibited at the north end of the village. Position, lat. 0° 56′ 45″ S., long. 80° 43′ W.

68.—Africa.—*East Coast.—Bird Island.*—The lighthouse now building having reached the height of the upper light, that light will now be hid between the bearings South and S. by W. ½ W. Vessels passing inside the islands at night are therefore warned of this until the new light is exhibited.

69.—Australia.—*Queensland.—Burnett River.*—When vessels are observed making for the entrance to Burnett River, the following Tidal Signals, showing the depth of water on the bar, will, after this date, be exhibited from the Flagstaff at the Pilot Station, on the South Head.

Depth of Water.	Signal.
6 ft. 0 in.	Ball, north yard-arm.
6 ,, 6 ,, ...	Ball, south yard-arm.
7 ,, 0 ,, ...	Flag, north yard-arm.
7 ,, 6 ,, ...	Flag, south yard-arm.
8 ,, 0 ,, ...	Ball, north and south yard-arms.
8 ,, 6 ,, ...	Flag, north and south yard-arms.
9 ,, 0 ,, ...	Two balls, north yard-arm.
9 ,, 6 ,, ...	Two balls, south yard-arm.
10 ,, 0 ,, ...	Ball above flag, north yard-arm.
10 ,, 6 ,, ...	Ball above flag, south yard-arm.
11 ,, 0 ,, ...	Flag above ball, north yard-arm.
11 ,, 6 ,, ...	Flag above ball, south yard-arm.
12 ,, 0 ,, ...	Ball above flag, north; ball, south yard-arm.
12 ,, 6 ,, ...	Ball above flag, south; ball, north yard-arm.

Depth of Water.	Signal.
13 ft. in. 0 ...	... Flag above ball, north; ball, south yard-arm.
13 ,, 6 ,, ...	... Flag above ball, south; ball, north yard-arm.
14 ,, 0 ,, ...	... Two balls, north; flag, south yard-arm.
14 ,, 6 ,, and upwards	... Two balls, south; flag, north yard-arm.

These signals are similar to those used at the Upper Flats' Lightship, Fitzroy River.

70.—United States.—*California.—Reyes Point Lighthouse.*—A steam fog-whistle has been established. During thick and foggy weather it will sound blasts of 8 seconds' duration, with intervals of 52 seconds.

71.—North Sea.—*Jutland.—Graa Deep.*—In the month of April, 1878, two *fixed white* leading lights of the third order will be established on the Seding strand, bearing E. by N. $\frac{3}{4}$ N, and W. by S. $\frac{3}{4}$ S., distant 700 yards from each other. The western light is 41 feet above the level of the sea, and the eastern light 78 feet, and they should be seen, respectively, 11 and 14 miles. The lights in one lead over the bar into the port.

72.—Baltic.—*Gulf of Danzig.—Hela Peninsula.*—A telegraph station, by which shipwrecked seamen will be able to communicate with Danzig, has been established.

73.—Australia.—*Queensland.—Bustard Head.*—A *red* sector of light of 5 degrees of arc is now exhibited from the lighthouse, as a mark for the *outer rock*, the centre of the sector bearing S. $\frac{1}{2}$ W. The light will also show *red* from E.S.E. towards the land. Two additional small white lights are also exhibited to the south-eastward of the lighthouse, which are seen in one from the outer rock.

Note.—When vessels passing Bustard Head are within the sector of red light they will be in a line with the outer rock, and when the south light of the two additional lights is seen over the north light (allowing for height of eye) they will be outside the rock. Between Bustard and Gatcombe Heads, by keeping in the white light of Bustard Head, vessels will keep clear of the out-lying dangers off Rodel Peninsula, and the east banks at the entrance of Port Curtis. In clear weather, when the lights can be seen from the North Channel into Port Curtis, vessels from the southward should not come within the red light of Bustard Head until Gatcombe Head light shows red, and is steered for on a W.S.W. bearing.

CHARTS, *&c., Published by the Hydrographic Office, Admiralty, to the end of February*, 1878, *and Sold by the Agent, J. D. Potter*, 31, *Poultry, and* 11, *King Street, Tower Hill.*

No.	Scale.		s.	d.
2179	m = 2·0	Australia, East Coast—Botany Bay and Port Hacking	1	6
946	m = 0·5	Borneo—Malludu Bay	0	6

OUR OFFICIAL LOG.

ROYAL NAVY AND ROYAL NAVAL RESERVE.

Abbreviations.—Ad., Admiral; A., Assistant; C., Captain; Cr., Commander; C., Chief; Cl., Clerk; Cn. Chaplain; D., Deputy; E., Engineer; F., Fleets; H., Hospitals; I., Inspector; L., Lieutenant; M., Midshipman; N., Navigating; P., Paymaster; *r.*, Retired; S. L., Sub-Lieutenant; Sn., Surgeon; St., Staff; N. Inst., Naval Instructor; 1st Class A. E., 1st Class Assistant Engineer; 2nd Class A. E., 2nd Class Assistant Engineer; N. Ct., Naval Cadet; Ng. Ct., Navigating Cadet; R. N. R., Royal Naval Reserve.

PROMOTIONS.—**Ad.**—The Hon. Francis Egerton, 1855; Edward B. Rice, 1855; Frederick C. Syer, on retired list, 1855. **C.**—Thomas T. Phillips, 1864; George D. Morant, 1866; Edward H. Seymour, 1866; Marcus A. S. Hare, 1867. **Cr.**—Hon. Francis G. Crofton, 1859; Arthur C. H. Paget, 1860; Mather Byles, 1861; William E. Fitzgerald, 1861; Herbert F. Crohan, 1862; Francis J. Pitt, 1862; Cecil F. W. Johnson, 1863; Richard H. Hamond, 1864. **N. L.**—Theodore G. Fenn, 1866; Sidney Smith, 1866; Richard W. E. Middleton, 1866; William H. Stephens, 1866; Bertram E. Gwynne, 1866; John A. Jones, 1866; James R. Veitch, 1866.

APPOINTMENTS.—**Ad.**—The Hon. George F. Hastings, to be Commander-in-Chief at the Nore. **C.**—Thomas Le H. Ward, 1867, to *Thetis*. **Cr.**—William H. C. St. Clair, 1868, to *Cockatrice;* Edward H. Wilkinson, 1867, to *Lively;* Coryndon P. Boyer, 1869, to *Hector*, for Coastguard; Alfred Markham, 1867, to *Boscawen*. **L.**—Henry P. Gilbert, 1866, to *Hector*, for Coastguard; Arthur F. Gressley, 1866, to *Duke of Wellington;* Frederic Walter, 1863, to *Agincourt;* Frederic Maitland, 1872, William F. Carslake, 1872, Arthur C. Clarke, 1872, and Charles H. Herring, 1872, to *Cambridge;* William Farr, 1871, William J. Moore, 1872, and Joseph E. T. Nicolls, 1873, to *Minotaur*, for disposal; William N. Madan, 1872, and George L. W. Adair, 1872, to *Cambridge:* Thomas Sucking, 1867, Alfred M. Causton, 1867, and Edward G. Deedes, 1871, to *Clio;* Arthur B. Mansell, 1866, to *Pembroke;* William Collins, 1864, to *Boxer*, in command; George W. Allen, 1863, to *Pheasant*, in command; John A. H. Trotter, 1861, to *Pigeon*, in command; Henry Sandford, 1872, to Royal Naval College, Greenwich; Charles H. Warren,

1870, to *Pert;* Hugh C. D. Ryder, 1867, to *Impregnable*, for *Squirrel;* Henry H. Justice, 1865, to *Impregnable;* Walter W. Poynter, 1863, to *Lord Warden;* William E. Darvall, 1863, to *Penelope;* Charles H. Harris, 1864, to *Valorous;* Samuel Pulley, 1863, to *Pembroke;* Alfred Anderson, 1863, to *Indus;* Phillip H. W. Mayow, 1863, and Frederick R. Curr, 1866, to *Lord Warden*, for special gunnery duties. **N. L.**—Thomas W. Webster, 1865, to *Princess Charlotte;* Herbert D. Walker, 1866, to *Thetis;* Albert R. Wonham, 1867, to *Pembroke*, for *Barracouta.* **S. L.**—Francis T. Brooke, to *Pembroke;* Arthur Dove, to *Thetis;* Henry B. Warren, to *Royal Alfred;* James Ewing, to *Pembroke*, **N. S. L.**—Robert M. Bryant, to *Orwell;* George W. Balliston, to *Jackall;* William Renwick, to *Impregnable*, for *Squirrel;* George S. Keigwin, to *Ganges*, for *Liberty;* Alfred S. de Ridder, to *Euphrates;* Francis Roberts, to *Immortalité;* Charles B. Clark, to *Tamar.* **M.**—Roland A. Dobree, George W. Tyler, Francis Alexander, Reginald B. Colmore, and Stedman A. Southwell, to *Valorous;* Percy R. Brideson, to *Valorous*, supernumerary; Griffith G. Phillips, to *Thetis;* William M. Oxley, to *Royal Alfred.* **N. M.**—Thomas H. W. Jerram, to *Valorous;* Henry Baker, to *Royal Alfred.* **N. Ct.**—Aylmer H. G. Williams, to *Valorous;* Reginald H. Curtis, Paul Hewett, and Frederic J. O. Plumer, to *Thetis;* **Ng. Ct.**—William B. Fawckner, to *Royal Alfred.* **E.**—Robert Anderson, 1867, to *Valorous;* Henry Benbow, 1868, to *Excellent;* William H. Green, 1862, to *Asia*, for *Tyrian;* George Wollard, 1868, to *Audacious;* James W. Watson, 1868, to *Thetis*, additional. **A. E. 2nd Class.**—James Pibworth, acting, to *Crocodile;* John E. Chase, to *Crocodile;* John Crocker, to *Indus*, for disposal; Edward Attwood, 1873, to *Pembroke*, for disposal; Joseph Organ, to *Indus*, as supernumerary. **St. Sn.**—John C. Ingles, 1871, to *Immortalité;* Thomas J. Breen, 1868, to *Cambridge.* **Sn.**—Daniel O'Connor, M.D., 1867, to *Pembroke;* William J. Eames, 1863, to *Duke of Wellington.* **A. Sn.**—William J. Wey, 1867, to *Ganges;* William H. Patterson, 1872, to *Audacious;* Daniel J. Freeman, 1872, to *Pembroke*, for temporary service; Edward C. Thompson, M.B., 1873, Francis R. M. Loftie, 1873, and John W, Scott, 1873, to *Royal Adelaide*, for Plymouth Hospital; John L. O'Keefe, 1873, to *Pembroke*, for Melville Hospital. **P.**—David T. Waugh, 1864, to *Terror;* Frank Pitman, 1870, to *Iron Duke.* **A. P.**—Robert W. Saunders, 1873, to *Black Prince;* Sidney W. Wright, 1872, to *Pembroke;* John P. Mc P. King, 1868, to *Terror;* Horatio W. P. Kovystra, 1861, to *Duke of Wellington.*

RETIREMENTS.—**Ad.**—Right Hon. Thomas, Earl of Lauderdale, K.C.B., 1867; Sir Leopold G. Heath, K.C.B., 1871. **C.**—Thomas H. M. Martin. **St. C.**—Francis H. May, 1867, as captain. **Cr.**—Henry H. M. Magarth, 1868; Somerled Mac Dougall, 1867; Edward Barkley,

1865. **L.**—James N. Croke, 1858, as commander; John Hicks, 1870. **S. L.**—Claude S. Fuller, 1869. **St. Sn.**—Christopher K. Ord, 1869. **S.**—Thomas McCarthy. **A. P.**—Edwin Theakston, 1861; Augustus A. Lyne, 1864; Charles H. Fauvel, 1867; David C. Ker, 1869; and Robert C. Bates, 1868.

DEATHS.—**C.**—James S. Graham, 1870, *r.*; William Barrie, 1864, *r.* **L.**—Charles A. Blake, 1865; Thomas E. Sulivan, 1866. **N. S. L.**—Robert H. C. Hebden, 1866, *r.* **Sn.**—John S. Davidson, 1846, *r.*

BOARD OF TRADE INQUIRIES AT HOME.

63. *Ceres*, of Belfast, foundered in Belfast Lough, 19th November, 1872. Inquiry ordered 24th December, 1872. Proceedings pending.

64. *Germany*, of Glasgow, stranded at the Gironde on the 21st December, 1872. Inquiry ordered 30th December, 1872, and held at Liverpool on the 16th, 17th, and 18th of January, before T. S. Raffles, Esq., stipendiary magistrate, with Captains Harris and White as nautical assessors. Master exonerated. Loss of ship attributable wholly to the action of the French pilot.

65. *Thames*, of Liverpool, stranded at Richibucto, on the 3rd November, 1872. Inquiry ordered 31st December, 1872. Proceedings pending.

66. *Supply*, of South Shields, stranded on Hook Sand, off Poole, on the 14th December, 1872. Inquiry ordered 3rd January, and held at Sunderland, before J. Candlish and R. Elwin, Esqs., J.P., with Commander Prouse as nautical assessor. Master exonerated. The vessel having been sent to sea in an unseaworthy condition.

67. *Princess Alexandra*, of Fowey, stranded on Fort Mahon, east of St. Vallery, France, on the 6th December, 1872. Inquiry ordered 4th January, and held at Greenwich before D. Maude, Esq., stipendiary magistrate, with Captains Hight and Steele as nautical assessors. Master in default in putting his ship on starboard tack when the wind shifted. Certificate suspended for six months.

69. *Marseilles*, of Glasgow, stranded off the South Rock Light, on the 5th January. Inquiry ordered 18th January, but subsequently abandoned.

70. *Druid* (s.s.), of Sunderland, boiler exploded about six or seven miles S.S.E. of Newarp Light Vessel, on the 6th January. Inquiry ordered 22nd January, and held at Grimsby on the 11th of February, before Jas. Reed and J. Skelton, Esqs., J.P., with Captain Harris as nautical assessor, and W. C. Taylor, Esq., as engineer assessor. Explosion the result of culpable neglect on the part of the owners, who were condemned in the cost of the inquiry.

71. *Charles*, of Wexford, supposed to have foundered between Kingstown and Wexford, on or about the 5th of January. Inquiry ordered 23rd January, with Captains Harris and Hight as nautical assessors. Proceedings pending.

72. *Northfleet*, of London, in collision and foundered in Dungeness Roads on the 22nd January. Inquiry ordered 27th January, with Captains Harris and Hight as nautical assessors. Proceedings pending at Greenwich.

73. *William*, of Newcastle, abandoned about seven miles south of the Eddystone on the 26th January. Inquiry ordered 6th February. Proceedings pending.

74. *Britannia* (s.s.), of Glasgow, stranded on the island of Arran on the 27th January. Inquiry ordered 10th February. Proceedings pending.

75. *Orion*, of Faversham, stranded at Auckland island on the 11th December, 1872. Inquiry ordered 14th February. Proceedings pending.

76. *Dasher*, of Amlwich, was abandoned off Kinsale. Inquiry ordered 15th February. Proceedings pending.

77. *Kate*, of Middlesbro', foundered off the Cork Light Vessel on the 8th February. Inquiry ordered 15th February. Proceedings pending.

Inquiries Abroad.

114. *Albanian*, of Hull. The master of this ship requests us to state that Messrs. Samson and Graham, whom we stated to be "master mariners" were stated at the inquiry to be "British merchants." As he feels aggrieved, we insert this to satisfy him.

118. *Yeddo* (s.s.), stranded off Passage Island, on the 5th October, 1872. Inquiry held at Shanghai, before C. Alabaster, Esq., H.B.M. Consul, president, Lieutenant C. V. Strange, R.N., Navigating Lieutenant, F. S. Helby, R.N., N. Roskell, and W. S. Gedye, master mariners. Master acquitted of all blame, both previous to and after the casualty.

119. *Tacora* (s.s.), of Liverpool, stranded on Cape Santa Maria, 28th October, 1872. Inquiry held at Pylades Monte Video, before Major James St. John Munro, H.B.M. Consul, president, Commander C. Jones, R.N., Lieutenant G. J. Hirtzel, N. N. H. Lafore, Esq., merchant, and T. Venus, master mariner. Master committed an error in judgment in not making an allowance in his reckoning for the current.

120. *Albacore*, of Nova Scotia, stranded off the Island of Little Inagua, on the 6th November, 1872. Inquiry held at Inagua, Bahamas Island, before J. N. Brown, Esq., resident justice, and W. Prudden, Esq., nautical assessor. Master exonerated. Stranding caused by a strong adverse current when the vessel was in a narrow channel.

121. *Faith*, of Liverpool, stranded at Princess Island, on the 30th November, 1872. Inquiry held at Batavia, before N. McLean, H.B.M. Consul, president, J. C. Feldgate, and A. Jamieson, master mariner, H. Buchanan, Esq., and J. G. Wilson, Esq., merchants. Master exonerated. Loss of ship attributed to the thick and heavy weather, and the strong current setting towards the island.

122. *Guiding Star*, of Sydney, was burned at sea in lat. 36° 55′ S., long. 94° 53′ E., on the 22nd October, 1872. Inquiry held at Sourabaya, before A. Hadaway, Esq., H.B.M. Acting Vice-Consul, president, T. M. Davidson, Esq., merchant, P. Vader, Esq., assessor, R. Deas, and W. Fordyce, master mariners. Master exonerated. The origin of the fire unknown.

123. *Hokitika*, stranded on the coast of Western Australia, on the 2nd November, 1872. Inquiry held at Freemantle, before L. W. Clifton, Esq., collector of customs, J. F. Stone, Esq., justice of the peace, and E. A. Marsh, master mariner. No blame attributable to master or any of the crew.

124. *Sir Francis*, stranded on the coast of Massachusetts on the 3rd January. Inquiry held at Boston, United States of America, before C. A. Henderson, Esq., H.B.M. Consul, president, R. M'Dowall and G. Croot, master mariners. Casualty occurred during thick weather, while the ship was in uncertain position. Master reprimanded.

125. *Erme*, of Salcombe, stranded off Danger Point, on the 26th November, 1872. Inquiry held at Mossel Bay, before the president magistrate. Vessel lost through the severity of the gale. Master and mate exonerated.

126. *Cruiser*, stranded at Port Elizabeth, on the 27th of November, 1872. Inquiry held at Port Elizabeth, before A. C. Wylde, Esq., President magistrate, and F. Skead, Esq., nautical assessor. Casualty the result of negligence. Master's certificate suspended for four months and the mate's for three months.

127. *Tonbridge*, stranded off Raffles Island, on the 23rd November, 1872. Inquiry held at Shanghai, before C. Alabaster, Esq., H.B.M. Consul, president, Lieut. F. T. Helby, R.N., and W. B. Andrews, master mariner. Master exonerated. Loss of ship the result of unavoidable accident.

Magistrates' Investigations.

No. 1.—*Wimbledon*, of Liverpool.—On the 9th January, 1873, enquiry held before the Cardiff magistrates into a complaint of insufficient provisions, by three of the crew. The beef and rest of provisions were

found to be sound and wholesome, and the remainder of the crew being satisfied with the quality and sufficiency. Sentenced to ten weeks' imprisonment each, with hard labour.

No. 2.—*Gleaner*, of Yarmouth.—On the 14th January, 1873, enquiry held by the Newcastle magistrates into a charge of omission to make entry in the official log as to the ship's draught of water. A fine of ten shillings, with seven shillings costs was inflicted.

No. 5.—*Orontes*.—On the 21st January, 1873, eight seamen were charged before the Holyhead magistrates with disobeying lawful commands, assigning as a reason the ship's unseaworthiness. The allegation as to unseaworthiness was not borne out, but as the ship was found to be leaky, and the men had been uncomfortable and harshly treated, they were sentenced only to one day's imprisonment.

No. 6.—*Gilbert Wheaton*.—On the 27th January, 1873, two seamen were charged before the Holyhead magistrates, with disobedience of lawful commands. They alleged that the vessel was unsound. Day was sentenced to ten, and Ralby to seven days' imprisonment, with hard labour.

Naval Courts.

No. 1.—*Young Dick*.—On the 30th December, 1872, a Naval Court was held at Genoa under the presidency of H.B.M. Consul, to inquire into a charge of unjustifiably refusing duty preferred against William Jones, A.B., of the schooner *Young Dick*. He was sentenced to be discharged from the vessel, and imprisoned for six weeks from date of arrest.

No. 2.—*Cambria*.—On the 13th December, 1872, a Naval Court was held at Naples, under the presidency of H.B.M. Consul, to inquire into a charge of using abusive and insulting language, and assaulting the master, preferred against Samuel Le Cappelain, cook and seaman of the schooner *Cambria*, of Penzance. He was sentenced to six weeks' imprisonment, and to be discharged from the ship; his wages to go towards defraying the costs.

No. 3.—*Virago*.—On the 6th November, 1872, a Naval Court was held at Port Said, under the presidency of H.B.M. Vice-Consul, to inquire into a charge of drunkenness and mutinous conduct, preferred against John Burt, A.B., of the s.s. *Virago*, of Hull. He was sentenced to be discharged from the ship, and to be imprisoned for four calendar months in Alexandria Prison; the expenses of the court to be paid by the master, who was authorised to deduct them from the balance of the prisoner's wages.

No. 4.—*David Malcolm*.—On the 2nd January, 1873, a Naval Court was held at Genoa, under the presidency of H.B.M. Consul, to inquire

into a charge of assault, preferred against T. Noonan, cook and steward of the barque *David Malcolm*, of London; also certain complaints made by the crew who had refused work. T. Noonan was sentenced to fourteen days' imprisonment, and to be discharged from the ship. The remainder of the crew agreed to return to work, the master having promised to set matters right. The master was permitted to stop from their wages any expenses that might have been incurred.

No. 5.—*David Malcolm.*—On the 2nd January, 1873, a Naval Court was held at Genoa, under the presidency of H.B.M. Consul, to enquire into a case of unjustifiably refusing duty preferred against John Walker, B. Dillerstone, W. H. Gregory, R. Wilkinson, and A. Chabin, of the barque *David Malcolm*, of London. They all agreed to return to work with the exception of Dillerstone and Gregory, who were sentenced to imprisonment. Expenses to be deducted from their wages.

No. 6.—*Cordova.*—On the 8th January, 1873, a Naval Court was held at Lisbon, under the presidency of H.B.M. Consul, to enquire into a charge of wilful disobedience and neglect of duty preferred against six seamen of the *Cordova*, of Liverpool. They were found guilty, and sentenced to 12 weeks' imprisonment.

No. 7.—*Sydney Dacres.*—On the 4th January, 1873, a Naval Court was held at Lisbon, under the presidency of H.B.M. Consul, to enquire into a charge of wilful disobedience of lawful commands, and embezzlement of ship's stores, preferred against 15 seamen of the *Sydney Dacres*, of Liverpool. Fourteen of the men were sentenced to 6 weeks' imprisonment. The remaining one, O'Neill, having been struck by the master, was simply dismissed his ship.

No. 8.—*Wanja.*—On the 7th of November, 1872, a Naval Court was held at Hakodate (Japan), under the presidency of H.B.M. Consul, to enquire into a charge of intoxication preferred against the captain of the *Wanja*, by the first and second mates of that vessel, and likewise a charge of insubordination made by the captain against the first and second mates. The court acquitted Captain Withers of intoxication, but fined him 10 dollars for an assault on one of the mates. The first mate was sentenced to 12 weeks' imprisonment, and the second mate to 14 days. Costs of proceedings to be divided between the captain and both mates.

No. 9.—*Lydia Hilton.*—On the 28th January, 1873, a Naval Court was held at Madeira, under the Presidency of H.B.M. Consul, to enquire into a charge of drunkenness and threatening to shoot the mate, preferred against the master of the British schooner *Lydia Hilton*, of London. He was found to have acted intemperately, and to have shown want of judgment, and was dismissed his ship.

No. 10.—*Mary Moore.* On the 9th November, 1872, a Naval Court was held at Kanagawa, under the Presidency of H.B.M.'s Consul, to enquire

into a charge of drunkenness and assault, making a false entry in the official log, and using abusive and threatening language, preferred against the master of the *Mary Moore*, of Liverpool, by the mate of that vessel. As the two latter charges were found to be not proved, he was convicted only of drunkenness and assault, and was reprimanded for drunkenness, and fined one dollar for the assault.

Local Marine Board Inquiries.

No. 1.—*Ouse.*—On the 15th January, 1873, an enquiry was held by the Sunderland Local Marine Board, into a charge of misconduct and drunkenness preferred against the master of the *Ouse*. He was found guilty, and sentenced to have his certificate suspended for twelve months.

No. 2.—*Minerva.*—On the 7th, 10th, and 21st January, 1873, an enquiry was held by the Glasgow Local Marine Board, into a charge of misconduct and drunkenness preferred against the master of the steamship *Minerva*. In returning his certificate, the Chairman expressed the opinion of the Local Marine Board, that his conduct had been culpable, although it did not amount to gross drunkenness under the statute.

Shipping and Mercantile Gazette Correspondence.

(Reprinted by special arrangement with Sir William Mitchell.)

Cargo of Staves.—A master chartered his vessel at Quebec to load a full and complete cargo of staves for Oporto. The conditions of charter-party were:—"Cargo to be, four-fifths 2½ inches thick, one-fifth to be three inches thick, and small staves of two-thirds freight for broken stowage, at master's option; freight to be paid at the rate of £34 per M of 1,200 pieces." When taken in he found the staves that were being shipped were much thicker than those stipulated for, and let the shipper know by letter, but got no satisfaction. Consequently, he gave notice that he would not sign bills of lading except under protest. When called upon to sign and to clear out at the Custom House he did so, and the shipper protested against him. He arrived at Oporto all safe, and found when settling that the consignee of the cargo made out his freight account by his invoice, which reduced the staves to a smaller size than those stipulated for, when, in fact, they were actually much larger. The average of the whole cargo was three inches and a quarter, measured by a competent person. The master received the freight under protest. The only answer he could get was, the custom of the port. Is he obliged to carry so much for nothing? The excessive measurement came to 4,000 inches.—The shipowner was entitled to a cargo of staves, whereof four-fifths were

to be 2½ inches thick, and one-fifth three inches, with small staves for broken stowage. If, therefore, the charterer did not fulfil his contract by shipping the particular description of staves stipulated for, and furnish a full and complete cargo thereof, as per charter-party, he is liable for any deficiency between what would have been earned had the contract been fulfilled and the freight payable on the actual quantity shipped and delivered. If the charterer has committed a breach of the agreement he is the person to be sued, and not the consignee or merchant, who is entitled to the goods if he is the owner of the same, under the conditions stated in the bill of lading, and not a mere agent of the charterer. It is customary, in many ports where merchants establish the trade usages, to measure staves at the thin end, and this makes a difference in favour of the merchant as against the shipowner of from 20 to 55 per cent., according to the description of the staves. The master has, perhaps, calculated his measurements by the thick section of the stave, and hence the difference.

Collision in Compulsory Pilotage Water.—A loaded steamer from abroad, bound into port with a compulsory pilot on board, comes into collision with an outward-bound steamer, doing her serious injury. If the collision was occasioned through culpable negligence or inattention to rules on the part of the former, who is liable to the injured vessel for the damage received?—The ship having been in charge of a duly licensed pilot in compulsory pilotage waters, the shipowner is relieved from all liability for damages incurred through the culpable neglect or inattention of the pilot, unless it can be proved that the servants of the shipowner neglected to obey the commands of the pilot, or otherwise contributed to the collision.

Commission.—What is the customary commission paid to brokers on the sale of yachts; and is there any difference in rate of commission on sales of steam yachts and sailing yachts?—The regular commission in London for selling or purchasing ships is 1 per cent.

Damage in Harbour.—What is the position or liability of the charterer of a vessel, or of a Harbour Board, in the event of the loss of, or injury to, a vessel when in charge of a person (as a quay porter) who is not a licensed pilot of the port where such an occurrence might take place?—According to recent decisions, harbour authorities are not responsible for injuries to vessels resulting from the negligence or want of skill of persons in charge of the same.

Del Credere Commission.—What is the rule or understanding of trade as to an agent selling on a Del Credere Commission, and what discretion is there as to price on its being called for; and is the agent bound to give his principal the names of the parties to whom sales were made?—An agent acting under a Del Credere Commission is in the position of a

surety, and he is not bound to give up the names of parties whose payments he has secured, nor is it usual in trade dealings to do so.

Distance Pilotage.—A licensed pilot sailed from Grimsby in the Russian ship *Dagmar*, of Finland, by an agreement at 12s. 6d. per foot to Downs, as per Trinity House tariff, and got as far as Southwold, when a heavy gale of wind from S. sprung up, and a heavy sea struck the ship, shifted cargo, and hove ship on beam ends, after which she had to be abandoned, and crew and pilot were landed by fishing smack at Ramsgate. Can the pilot claim any distance pilotage for services rendered?—The pilot having engaged to take the ship to the Downs, and having been ready and willing to perform that duty, he is entitled to his distance money to the Downs.

East Coast.—From this extract from a charter-party—namely, "to Deal for orders to proceed to a safe port on the east coast of Great Britain, or so near thereunto as she may safely get, and lay always afloat, but Goole and Gainsborough always excepted"—would the charterers be entitled to order the vessel to London?—London is never treated in charter-parties as an east coast port.

Fairway.—The fairway of a river is the navigable part of a stream used by ships in passing up or down. It is defined by local authorities, in instances, by the buoying of channels, or by the regulations which order vessels not to be anchored so as to obstruct navigation. Mid-channel is the middle line of a fairway, but the navigable line must depend upon the breadth of a river, its depth of water, and the vessels using it. Low water is a good average divisor, but it is not applicable to every river.

Forged Certificate.—A mate has a very inferior discharge given him. He, however, manages to get a blank discharge from the shipping office, which he fills up, and forges a master's signature. With this discharge he applies and obtains a master's certificate, and eventually has command of a first-class steamer. At the same time he boasts how very simple a matter it is to obtain a discharge, as also a certificate. To whom should all particulars be given proving the above to be facts; and what is the punishment for obtaining a master's certificate with a false and forged discharge?—A statement of the case should be sent to the Registrar-General of Seamen, Adelaide Place, London Bridge. The punishment for forging a discharge is imprisonment with hard labour. (See section 140 of the Merchant Shipping Act, 1854.)

Injury on Shipboard.—If a mate of ship goes on shore without leave from the captain, and gets drunk, and on his return falls from the quay to the deck, and fractures his skull and dies, who is responsible for all his expenses; and would the owners be exonerated by the man's falling through being drunk?—The injury not having been received in the

service of the ship, the expenses would fall on the deceased seaman, and might be deducted from his wages.

LAY-DAYS.—A steamer is chartered upon the usual form of grain charter. She gets to Falmouth for orders. Her captain telegraphs the consignees, through his agent, his arrival, and asks for his orders. The agent, in sending his report of the condition of the cargo, adds the fact that on anchoring the propeller is damaged, which unfits her to proceed to sea at the moment. Will lay-days count from the time the captain reported his arrival, or from the date the steamer is fit to proceed to sea?—The charterer is not liable for the detention of a steamer in consequence of the propeller breaking and retarding the voyage; consequently, any loss of time arising therefrom could not be claimed as lay-days.

MASTER'S WAGES.—A master shipped by the month, and no notice of dismissal was given until the day of closing the books, when he was informed the ship was to lay up. Can he claim a month's pay in lieu of notice?—In this case the master is entitled to the wages already earned, and one month's wages in addition in lieu of notice, the hiring being a monthly one, and not by the voyage.

GIRGENTI.—A shipbroker recommends shipmasters coming out with coals to Girgenti to have inserted in charters the clause, "cargo to be weighed on board ship," and not to admit any reference to custom of port, as a ship recently arrived in Girgenti from Newcastle with a cargo of coals (380 tons, as per bill of lading, signed "weight unknown.") The receivers compelled the captain to have coals weighed on shore, which, of course, turned out 16 tons short. On settlement, freight was paid for 364 tons as delivered. The terms of charter were "cargo to be discharged as customary." He also asks, can the receivers legally deduct both freight and value of coals short delivered?—The value of the coal said to be short delivered cannot legally he deducted from the freight by the laws of this country. The shipbroker having signed for weight unknown and delivered all he shipped, should sue the charterer for the full freight as per bills of lading, and the value of the coals deducted from the freight.

HORSE DUTY.—Are horses occasionally employed transporting lifeboats, liable to duty?—Horses, to be exempt from the duty, must be exclusively used in agriculture. Occasional employment of a horse on lifeboat service will not exempt the owner from payment of duty.

INCOME-TAX.—A new ship leaves a port in ballast for a loading port, thence for a twelve or fourteen months' voyage. Previous to the ship arriving at the port of loading the managing owner receives a paper from the Surveyor of Taxes, requesting a return to be made on the ship's earnings. How can returns be made on the ship's earnings, the ship

never having had a cargo in ?—The earnings of a ship which has never had a freight cannot be given, and there are no means of estimating it; but the Commissioners of Inland Revenue say that capital cannot be unproductive, and that before money has been invested in a ship, it has been placed on interest somewhere. It is for our correspondent on appeal, to show that no income has been derived from his capital.

Salvage Services.—A shipmaster says, on 3rd June last, at seven a.m., lat. 24° 16′ N., long. 38° 18′ W., I sighted a barque, flag half-mast, upon which I bore down. A boat from the barque boarded us, when they informed us of the following facts:—The captain was dead, having died on the voyage on the 29th of May. The mate was sick, and as he himself told me, was no navigator, nor any one on board, the crew consisting of negroes. I supplied him with a few small stores, and, at the earnest request of all on board the barque, put my mate, a thoroughly efficient officer, in charge, to navigate the said vessel to her destination. Have I any grounds for a claim for salvage ?—In the case of the *Rowena*, of 78 tons—(see report in *Shipping and Mercantile Gazette*, of March 15, 1848)—the value of the vessel and cargo was £1,100, and the award was £150, or 13·637 per cent. The *Rowena* was bound from Sierra Leone to London, and her master died of fever nine days after leaving port. The mate of another vessel boarded her, and conducted her to Cowes, though very short of provisions, and the Court took into consideration the risk of the salvor from infection. In another case the Court gave £1,000 award as salvage, besides £200 to a mate for bringing home a ship and cargo, valued at £29,700, from Mauritius. The master having been drowned, a mate was put on board.—(See *Shipping and Mercantile Gazette*, May 14, 1856). There are other cases to the same effect.

Pilotage.—Can a licensed Bridgewater pilot claim Bristol Channel pilotage, boarding a vessel bound to Highbridge, off Minehead, when his services were only required for Highbridge, and not as Channel pilot ?—If the pilot brought the ship over from Minehead he will be entitled to the St. George's Channel or sea pilotage; and if he remained in charge of the ship after passing Lundy Island, he is also entitled to the Bristol Channel pilotage to Highbridge.

Sale of Vessel.—A shipmaster bought a small vessel on Monday for £240, and agreed, in the presence of two respectable men as witnesses, to pay half (£120) on the following Friday, and the balance in six months, the seller to have a mortgage on the other half. He then gave up the ship he was master of, and made himself ready to join his new-bought vessel according to agreement. When he went to the owner on the Friday to conclude the transaction, he told him that he had sold the vessel to another man for ready cash, and that he was very sorry for

him, but he could not let him have her. Can he claim the vessel, or come upon the owner for throwing him out of employment?—If the shipmaster can prove that he agreed to purchase the vessel, and that the owner contracted verbally, in the presence of witnesses, to sell the same, he can file a bill in a Court of Equity for specific performance, and compel the defendant in the suit to complete the sale, or to pay damages in default.

GENERAL.

NORTHFLEET COLLISION.

On the night of the 22nd January, 1873, the *Northfleet*, British emigrant ship, bound for the Cape, was riding peaceably at anchor in Dungeness Roads. She had on board 347 persons. The greater number of her passengers were "navvies" going out to undertake certain contractor's work in South Africa. While riding she was run into by a steamer, and in forty-five minutes sank. The confusion on board was frightful, and the loss of life amounted to 262. The steamer that ran into the *Northfleet* made off, although those on board of her knew of the casualty and heard the distressing appeals for help. The steamer is alleged to be the *Murillo*, sailing under the Spanish flag, but possibly partially British owned. She was detained by the Spanish authorities, and all on board placed under arrest immediately on her arrival at Cadiz. The captain and officers of the *Northfleet* perished; but amongst those saved was the captain's wife. On board the *Northfleet*, as passengers, there were many uncontrollable persons, and in his endeavour to maintain order, the captain found it necessary to shoot one of them. They had, it is stated, already before the casualty, formed a conspiracy to throw the captain overboard. It was, no doubt, in a great degree, owing to the uncontrollable character of the passengers, and the consequent utter absence of order, that many lives were lost.

The noteworthy features of this calamity are (1) that there were about one hundred ships riding at anchor round and about the *Northfleet*, and not one of them sent a boat to her assistance; (2) that there are three lifeboats within a reasonable distance of the scene of the disaster, and that not one of them put off; (3) that there are coastguard stations near, and no coastguard man, or officer, attempted to render assistance; (4) that the steamer that did the damage made off, and left the sufferers to perish. Thus we see that within sight of our shores, within sight of other ships, within sight of the coastguard, and within reach of the lifeboats, lives were lost in the year of grace 1873.

It is not creditable to us, as a mercantile nation, that this should be so, and yet life is often similarly lost, when aid could be sent. This loss of life is owing to the absence of any recognized signal of distress. The gun of the *Northfleet* was not kept loaded, a precaution all prudent navigators should take in a crowded anchorage, to warn off approaching ships. When the gun of the *Northfleet* had to be fired, first, the sponge broke in the gun, and next the screw intended to extract obstructions from the gun, broke off too. This does not say much for the inspection made by the Government officers concerning the trustworthy character of the means provided for making signals of distress. When the gun could not be fired, rockets were sent up; but as they were not sent up on any recognised plan, they were only taken as signals for a pilot by those who thought they understood them, whilst they were admired as fireworks by others; and so amidst the yells and curses of the alarmed and infuriated navvies, the screams of the women and children, and a pyrotechnic display, the ship and her passengers went down.

The first thing suggested as requiring action, is to extend to foreign ships the obligation that is already legal as between British ships, that each ship shall remain by the other to render assistance to the other, and to give her name and port of registery. This is fully explained in our volume for 1872 in the article "Running away after Collision." The second is to define some signals that shall be signals of distress, and that, whenever fired, shall imply that assistance is wanted. The expense of putting out from the shore should always be paid for as salvage service, by the ship making the said signals. We gave such a code in our last volume. The signals must not be one sort of rocket, or a light of one colour, but must be something simple and unmistakeable that any ship can make. Groups of specially coloured rockets, or of special combinations, must be left for private signals as at present. The third step is to determine whether cork mattresses, or cork lifebelts should not, as in the United States, be carried for the passengers. The fourth is to devise some means whereby boats can be used, when wanted. These points will, we are satisfied, receive the attention they deserve by Mr. Chichester Fortescue and the officers of his department.

There is a bright side, however, even in the shocking details of the *Northfleet* calamity. We record the fact that, amidst the general apathy at the wreck, the cutter *Princess*, the steam-tug *City of London*, and the lugger *Mary*, acted nobly and saved life. After the wreck, the sympathy ashore was general. First and foremost, the gracious lady on the throne, our beloved Queen, sent speedily a message of condolence to the survivors, and sent personally to inquire as to Mrs. Knowles, the captain's widow; and the Lord Mayor of London got up a subscription, which amounted to £7,000, to be divided amongst the sufferers. The Board of Trade will,

of course, give something to those who rescued life. The most important feature in the practical sympathy that followed the disaster is that, on the recommendation of Her Prime Minister, our Queen has bestowed on Mrs. Knowles a pension of £50 a year. This is to be hailed with unmitigated pleasure by the widows and orphans of our seafaring population. Captain Knowles died in the execution of his duty, nobly, bravely; but he was in command of his own ship, and had not put out from a place of security to save those in peril. But many seamen die nobly and bravely in saving life when they are not on board their own ships, but voluntarily rush into danger and save life at imminent risk of their own. We may mention, as an instance of the kind we mean, the case of Robert Arkley, who was washed off the pier at Tynemouth in saving life from a wrecked ship, and who might, had he been so disposed, have remained at home; the case of the unfortunate man who was washed out of the Ramsgate lifeboat the other night in putting off to a wreck is another. These two men have left widows and children, and it is only reasonable to suppose that their very distressing cases will not be thought less of by the country than is the case of Mrs. Knowles. The Prime Minister, who has acted with such promptitude in the case of the *Northfleet*, ought certainly not to be left in ignorance of the circumstances that have led to the loss of the lives of other master mariners, seamen, and boatmen, whose widows and families are in a position infinitely worse than the young widow in whom such interest is just now taken.

Lights of Trawlers.—In answer to a correspondent, we desire to state most emphatically that trawlers, when at work at night, even with their trawls down, are not required to carry a "white light," but are distinctly required to carry and to keep exhibited the red and green side lights required by the regulations. If the "trawlers" are *not* "open boats," these red and green lights must be fixed, and always in their places, with the proper inboard screens as in other sailing ships, unless the weather is too bad; but even then the lanthorns and their screens are to be kept on deck on their respective sides, and are to be shown in time to prevent collision. If the "trawlers" are "open boats," then they must still show a colored light, which they are required to do by having a lanthorn with a red and green slide always ready for instant exhibition to an approaching ship.

Towage on the Tyne.—The tugowners struck rather than court investigation. This in itself was strong *prima facie* evidence that their demands were doubtful. The correspondence in the *Shields Daily News* gives a clear insight into the whole business. The Act of Parliament

requires the "sanction" of the Board of Trade to any increase in the rates of towage. The Commissioners, siding with the owners of the tugs as against the shipowners, asked the Board of Trade to sanction a very large increase. The Local Marine Board, the Shipowners' Society, and the Chamber of Commerce (Mr. Jas. C. Stevenson, M.P., chairman of one of the meetings), opposed the tugowners. The Board of Trade were thus placed between two fires. On the one hand, the Commissioners and the tugowners said to the Board of Trade, "give the sanction." On the other hand, the shipowners said, in the interests of commerce, "do not give it." The Board of Trade asked, "how are we, at Whitehall, to know what to do under the circumstances? We cannot tell which side is right without inquiry. Let us have a local inquiry, but who is to pay for it? will you tugowners pay for it, as you are to be benefited?" The tugowners declined to pay, the Board of Trade had no money to pay with, and the tugowners struck; not because the Board of Trade will not sanction their proposed increase of dues, but because the Board of Trade *would* not sanction that increase on a peremptory demand, and without first taking the trouble to satisfy themselves, as they are bound to do, that the demand was reasonable. The provision requiring the Board of Trade to interfere in the rates was put into the Act without the consent of, and even without consulting that department; and now, as it appears, the Board of Trade will not be mere puppets in the hands of the tugowners against the shipowners, the tugowners struck. Mr. Stevenson, M.P., wisely and kindly came to the aid of both parties, and guaranteed the expense of a local inquiry, and in the meantime the Local Marine Board of Newcastle and others, having consented to a temporary increase in the rates, the matter rests for the present. Our article on Towage in the Tyne seems to have given much offence amongst a section there. We are sorry that this should be so, and if any correspondent there will show us wherein our facts are wrong we will put the matter right.

Collisions at Sea.—Our readers will be glad to see that for another session at least there is no fear of the present admirable Rule of the Road being disturbed. It is gratifying to find that the President of the Board of Trade is firm on this point. On the 18th February, Mr. Bentinck asked the President of the Board of Trade whether it was the intention of the Government to bring forward any measure during the present session for the better prevention of collisions at sea, and more especially with respect to vessels propelled by steam; whether it was the intention of the Government to take steps for establishing a danger signal to be used only by vessels in cases of emergency; and whether it was the intention of the Government to bring forward any measure giving powers for the infliction of penalties, where practicable,

in cases where the master of a vessel which had been in collision with another vessel did not do his best to render assistance to the vessel with which he had been in contact, his own vessel being in a condition to render such assistance. Mr. C. Fortescue remarked that the question was an important one, and with respect to the first part of it he did not think much more could be done by way of legislation to prevent collisions at sea. So far as he understood, it was necessary that the lights should be as good as could be obtained. *He was not prepared to propose any change in the steering or sailing rules* or in the rules relating to lights *now in force*, for as they had been adopted by all nations it would be undesirable to disturb them. With respect to the goodness of the light, he hoped a great improvement had already taken place, and that still further improvement would be made. The Marine Department of the Board of Trade had laboured very hard at the matter by experiment and investigation, and he believed that even now our lights at sea were better than those of any other country. Towards securing effectual relief when collisions had taken place, he had no doubt something might be done. The Marine Department of the Board of Trade had been long engaged in examination and discussion with all parties interested with the view of bringing about agreement with regard to danger signals. Those discussions had came to a close, and he found himself in a position to be able to propose to the House legislation on the subject which would tend to the universal adoption of an effectual signal in case of danger. They had every reason to believe that other countries had taken the same view, and the Government of France already agreed with them on the point. With regard to the infliction of penalties, an attempt was made in the House of Lords, by Lord Kingsdown, to introduce a clause in the Merchant Shipping Act Amendment Bill of a few years ago making desertion of a ship in danger felony. That clause was very badly received by the other high legal authorities and failed. The matter was, however, well worthy of consideration, and he was in communication with the law officers of the Crown on the subject.

Lifebelts.—The following copy of a letter from the Rev. M. Gossett, concerning the wreck of the *Zuma*, of Guernsey, has been received:—January 6th, 1872.—Dear Sir,—If you have not heard it from any other quarter you ought to know that the enormous advantage of these lifebelts to the Mercantile Marine has lately been well exemplified during a wreck at Hartland Quay—the *Zuma*, of Guernsey. Every man on board had on one of Captain Ward's Registered Seamen's Lifebelts. Five men were saved by them, one, the captain, with a badly fractured thigh; three other men would have been saved by the same lifebelts which they had on, but going down into the cabin to try and save some of their traps, they got entangled in the rigging and perished. Mr. Sheene,

Collector of Customs at Bideford, examined the survivors, and he informed me that those saved attribute their safety entirely to these lifebelts. They stated that it was something quite marvellous the way in which they were buoyed up on the waves, and cast up high and dry on the shore.—I remain, dear Sir, yours truly, M. Gossett.

Merry Men and Merriman on the Tyne.—Two of Merriman's dresses were tried on the 18th of January, in Tynemouth Haven, when the performance of two of the members of the brigade were marvellous. Mr. J. F. Spence again went in first with Mr. Morrison. The sea was rough—so rough, that one wave turned Mr. Morrison completely head over heels. Of course he righted again immediately. When they came out two other members tried their skill. They were not in many minutes till it was seen they were making heavy weather of it—"shipping seas a labouring continually." First there was a collision between them, and then they grew desperate, and floundered about with legs and arms in a manner most marvellous to behold. One was gradually stranded by the waves where he lay like a knight of other days helpless and ready to be cracked, till hauled "onto" his legs by one or two sturdy volunteers. He announced that he was quite exhausted. The other Merriman was rapidly carried seaward, and kicked and plunged apparently determined to drown himself if he could. Fortunately in this he could not succeed, and several of the volunteers ran along the pier, to a place where a stone jetty runs down to the water, and by shouting induced him to lie still. In a few minutes he was gently driven so close that they threw him a buoy with a line attached and hauled him ashore. He declared he was full of water to the waist, but that all knew was impossible. When the dresses were stripped off them neither had shipped as much as a breakfast-cup full of water, and the gentleman who deemed himself to be "full to the waist" was as dry as a bone below his thighs. It was, no doubt, only owing to their frantic exertions, and violent wriggling about, that the water got in at all. The end of it was overpowering laughter at the expense of these two "Merry men." Certainly the one who was hauled out by the rope would have been drowned ten times over if it had not been for the dress. One fact this trial has established, is that a man is very certain not to be drowned in one of these dresses, unless he is dashed against the rocks; or lies with his mouth wide open, and lets every wave run down his throat. The excitement of lookers on and idlers on shore, who were not aware of the nature of the performance, was intense, and some of them raved and shouted that the men would perish; but the quiet behaviour of the volunteers on shore, who knew all about it, reassured the lookers on, and the meddlers were silenced. The Board of Trade are preparing a regular drill for volunteers in this dress. For a full

illustrated description our readers are referred to page 1,032 of our volume for 1872.

ADMEASUREMENT OF TONNAGE IN FRANCE.—THE ENGLISH SYSTEM ADOPTED.—The President of the French Republic, on the report of the Minister for Agriculture and Commerce, having regard to article 6 of the law of 5th July, 1836, to the effect that: The method of measurement prescribed by the law of the 12th Nivôse of the year II. may be modified by Royal Ordinances. Decrees:—Art. 1. All merchant ships shall be measured in conformity with the method applied in England under the Merchant Shipping Act, 1854. The dimensions required for calculating the tonnage are to be expressed in metres, and decimal fractions of a metre. The product is to be divided by two cubic metres eighty-three hundredths. The number of tons obtained shall be cut deeply on the sides of the main beam, fore and aft. Art. 2. The provisions of the present decree will take effect from the 1st June next. All vessels built subsequent to this date shall be measured before any partition or compartment has been erected in the interior of the hold. From the same date, every vessel in the Mercantile Marine, according as it returns to France, and the cargo is discharged, shall be left empty during the time necessary for the measurement, which, however, shall never exceed eight days. All builders, owners, or consignees, are bound to erect, at their own cost, the scaffolding necessary for the measurement of their vessels. Art. 3. The Minister of Agriculture and Commerce, and the Minister of Finance are charged, each in so far as concerns him, with the execution of the present decree. Done at Versailles, the 24th December, 1872. (Signed) A. THIERS, by the President of the Republic; the Minister of Agriculture and Commerce, E. TEISSERENE DE BORT; the Minister of Finance, LEON SAY. [French officers are, at the present moment, in London acquiring a knowledge of the British system under the instruction of Mr. Moore, the able principal surveyor of tonnage.]

ST. HELENA.—FRESH PROVISIONS, &C.—The Board of Trade give notice that in order to encourage vessels calling at St. Helena to take in supplies of fresh meat and vegetables, so frequently needed for the health of those on board, the Government of that island have issued a notification declaring that vessels not anchoring, but having intercourse for such supplies, shall not be chargeable with the fee of one penny per ton, provided that in such cases the sum of one guinea be first paid to Her Majesty's Customs by such vessels, which shall then be allowed to receive supplies of fresh meat, poultry, fish, green vegetables, and medicine, and to have postal communication. The said fee to be appropriated towards the maintenance of the Pratique Boat, Telegraph Stations, and the Time Ball Office.

CONDITIONS AS TO APPOINTMENT OF SUPERINTENDENTS AND OFFICERS, CLERKS AND MESSENGERS IN MERCANTILE MARINE OFFICES.—As some doubt exists, and we have many applications on this subject, we called at the Board of Trade, and in answer to our application, received a circular, containing the conditions as follows. Any person applying at the Board of Trade can get a copy:—"1. Superintendents, and all officers and clerks appointed in Mercantile Marine offices, excepting extra clerks, at weekly wages, will be required to pass an examination in the following subjects:—(*a*) Writing from dictation accurately and expeditiously. (*b.*) The first four rules of arithmetic (simple and compound), decimals, vulgar fractions, and the rule of three. (*c.*) Good handwriting. (*d.*) General intelligence. (*e.*) Superintendents will, in addition to the above subjects, also be required to possess a thorough knowledge of accounts. 2. Each applicant will also be required to produce certificates of birth or baptism, and of health, character, and sobriety. 8. No person who on entering on the duties of the Mercantile Marine Office, is over thirty years of age, will be entitled to superannuation, unless he has already served in a similar office. 4. It is to be distinctly understood that a superannuation allowance is in no case to be demanded, or expected as a matter of right, but is solely dependent on an intelligent and efficient performance of duty. 5. The appointment of all superintendents, officers, clerks, and messengers, will, for the future, be probationary for the first twelve months, and no increase in their pay will be made at any time unless and until satisfactory reports are received from the superintendent of the Mercantile Marine Office, the Local Marine Board, and this Board's Inspector. 6. The appointments of surveyors and examiners will, in the like manner, be probationary for the first twelve months. 7. All officers, whether examiners, surveyors, superintendents, deputies, clerks, or messengers, will be required to retire from the service on attaining the age of sixty years, unless, on a special report from their inspector and medical officers, the Board of Trade specially decides to retain the services of any officer after that age. 8. The examination of examiners and surveyors will be special and technical as heretofore. 9. The examination of messengers will be restricted to legible handwriting, reading, and addition of money." The Local Marine Board have the appointments, but the Board of Trade fix the conditions, the number of persons to be appointed, and the salary. We have had many letters about a contention going on at the present moment at Sunderland, and it appears from the subject matter of the letters that the Board of Trade are wisely standing out for an old and valued servant. If all that has been written to us is true, we trust that the Board of Trade will stand out. An officer who is to be entrusted with large sums of money ought to be a good accountant and a first-rate man of business, and our readers

will agree with us that any control that secures such an appointment must be beneficial. Local, and, therefore, petty interests, often damage a port, and to prevent this, the Legislature have given the Board of Trade ample powers which the President may not think it undesirable to exercise.

NEGLECTING TO SIGNAL FOR PILOT.—THE "PUCK" AND THE "MARY."—The master of the *Puck*, from Antwerp to Goole, was charged at the instance of the Humber Pilotage Commissioners, under the 36th section of the Pilot Act, with neglecting to put up the usual signals for a pilot to come on board. The Collector of Customs at Goole having proved that defendant had certified that his ship was from a foreign port, defendant stated that he had all the signals he ever knew to be requisite. He had a right light out fore-stay, at an elevation of about 12 feet from the water, but no light at the masthead, and all he could say was that if it was required in the Humber it was a very dangerous regulation, and the sooner it was altered the better. He had never in other ports had to exhibit the light at the masthead, particularly since the new Board of Trade regulations came into force, by which no vessel but steamers were allowed to carry a light at the masthead, excepting pilot-boats, and they carried inside lights. The Court considered that the circumstances of the case did not indicate in one way or the other that there had been an attempt to defraud the pilotage commissioners, and it might be that defendant thought he was putting the light in the proper place; the penalty was therefore reduced to £3 10s. and costs. Robert Parker master of the schooner *Mary*, was fined £4 10s. for a similar offence —Hull Police Court, Dec. 6.

SCREW WIMSHURST.—Mr. H. Wimshurst is about to petition both Houses of Parliament to accord to him some consideratian for his services in connection with the invention and development of the screw propeller. To our mind he is entitled to certainly as much credit as Screw Smith in the earliest successful application of the screw; and while Screw Smith has come off fairly well, it is distressing to find Mr. Wimshurst out in the cold, and, at his age, obliged to undertake, at great cost to himself, steps to get even his co-operation acknowledged. He spent his money in the *Archimedes;* he perfected what Mr. Smith had failed to perfect, and he first fitted, in the case of the *Novelty*, engines acting directly on the propeller shaft. The Premier, who is generally alive to cases that are really meritorious, will, it is to be hoped, not deem the present case beneath his notice, and, let us hope, earnest consideration.

THAMES PILOTAGE.—The Merchant Shipping Act of 1872 came into operation at the beginning of this year, by which the Trinity House was empowered, by bye-law made with the sanction of Her Majesty in Council, to grant licences for the pilotage of vessels between London

and Gravesend, to men possessing lower qualifications than hitherto required. The bye-law has been made by the Trinity House, sanctioned by an order in Council, and now to all intents and purposes the pilotage of the Thames above Gravesend is practically open to "all competent male persons without restriction as to age or previous occupation." We understand that already many unlicensed men are applying for examination, and we welcome the change as a step in the right direction.

Irregular Shipment of Seamen.—The master of the shooner *Christabel*, of Eversham, was charged with four different breaches of the Merchant Shipping Act, in having, at various ports, shipped five seamen without having the agreement signed in presence of a shipping master, or causing said agreement to be explained to said seamen. He was further charged with having failed to lodge his documents with the Consular officer at Sydney within forty-eight hours of the ship's arrival. As it appeared that the offence consisted more of laxity than intention to break through the statute, the Sheriff took a lenient view of the case, and fined the master 10s. 6d. for the first and £1 1s. for the fourth offence, with costs.—Greenock Police Court, Dec. 18.

Storms.—The violent gales, during December last, have caused great consternation; and amongst ignorant and superstitious people the most serious apprehension has prevailed. It was not infrequently alleged that such storms were quite unprecedented, and that some radical change was visible in the state of the atmosphere, and, even, in the course of the seasons. A short statement of a few facts relating to some of the great tempests which have visited the British Isles, will tend to disabuse the public of such impressions. In 944 a storm in London destroyed 1,500 houses. In 1091 a similar calamity there prevailed and 500 houses and many churches fell. In 1382 the ship, which brought over the Queen of Richard I., was dashed to pieces, with many others, whilst in harbour. In 1389 a similar calamity happened when his second Queen arrived. In 1696 a storm on the east coast of England caused the loss of 200 colliers and coasters with most of their crews. On November 26th, 1703, the "Great Storm" occurred. The loss of property in London was said to be two millons in amount. Eight thousand persons were supposed to have been drowned by floods and wreck. Twelve war-ships with 1,800 men were lost within sight of shore; and 1,700 trees were uprooted in Kent alone. The Eddystone Lighthouse was destroyed and its constructor, the famous Winstanley, with his assistants, drowned. The Bishop of Bath and his lady were killed in bed in their palace. Numbers of cattle were destroyed. In one level alone 1,500 sheep were drowned. In 1794 several hundred sail of ships were destroyed. In 1800, 1814, 1816, 1821, 1822, 1828, and 1838, fearful gales visited various parts of Britain, causing immense loss to shipping and other property, and also to life.

In January, 1839, one of the most awful hurricanes came upon Liverpool, wherein twenty people were killed by falling houses, and 100 drowned in the neighbourhood. During the first storm predicted by the late Admiral Fitzroy, under the new system perfected by him, forty wrecks were occasioned, in one night, in Hartlepool Bay. In October, 1859, during the gale in which the *Royal Charter* was lost, 343 ships were destroyed. On the 11th January, 1866, at Torbay, sixty-one vessels were lost or damaged, causing a loss of thirty-five lives. According to the latest yearly "Abstract of Wrecks," published by the Board of Trade, one of the most unusual gales occurred in August, 1868, and the number of casualities at sea were double those recorded for the same month of any previous year. From the above statement it will be seen that nothing exceptional has taken place this year to what has been experienced during a history of about a thousand years.

Unseaworthiness.—The Working of Mr. Chichester Fortescue's Act.—A case of some interest was heard at the Cardiff Police Court on the 23rd and 25th January last, under the Act of 1871. Several seamen of the steamer *Dromedary*, of London, had refused to proceed on the voyage, alleging the vessel was too deeply loaded. The Bench ordered the Board of Trade Surveyor to report on the case. Accordingly, Mr. H. A. Henri, Steam Ship Surveyor, &c., at that port, held a survey, and reported in writing to the Justices on the 25th that, in his opinion, the steamer was loaded too deeply to be safe. There were other minor defects pointed out. The case against the men was dismissed in consequence of this report, and the owners ordered to pay the costs.

Ancient Treaties of Commerce.—The denunciation of that famous treaty of commerce of 1860, which was made with France through the influence and agency of Richard Cobden, and the substitution of a modified one by M. Thiers and his colleagues, has revived the interest in these leagues. It is usually supposed that treaties of commerce are of modern invention, but this is not so, for Edward I. of England contracted one with the Flemings so far back as 1272, just 600 years gone bye. This was the first made by England with any foreign power. The second was contracted with Spain and Portugal, in 1308, by Edward II. It is a little singular that, after the lapse of 564 years, we are about to negotiate with Portugal another treaty, to countervail the tendency of the French treaty, which is esteemed, by the former power, as an injury to its wine trade. But a more antique treaty of commerce is that mentioned in II. Samuel, 5th chapter, and 11th verse; also in I. Chronicles, 14th chapter, and 1st verse, wherein Hiram, King of Tyre, is recorded as sending men and timber to build King David a house or palace. The Jews were pastoral people, and the Tyrians were artizans, and, doubtless, a gage of reciprocity was made between them. This feeling continued, as we are

told, into the next reign. It is curious, also, to note that the kingdom of Tyre was a small one, and that of Israel was large, but the former made the first overtures to treat. So did England with France in 1860. The message of Hiram was sent 1,046 years B.C., or 2,918 years ago. The true commercial instinct which existed in those ancient peoples yielded its proper fruit. Tyre was one of the most magnificent places of olden times, and the wealth of King David was almost fabulous. The legacy he left to Solomon to build the Temple with, is said, by Eadie, to be 48,000 tons of gold and silver—the present value of which has been estimated at something like nine times the amount of our National Debt.

SOVEREIGNTY OF THE SEAS.—So much has been said and written lately on the power and capacity of the British Navy, that any little fact bearing on its history is of interest. The alleged superiority of *La Gloire* stimulated, some few years ago, the building of our *Warriors* and *Black Princes;* the American monitors brought us the turret principle; and now the cry is that we are being beaten by Russia, who is now building the vast ironclad, *Peter the Great*, to "wop creation with," that we may well, fortified by our past history, accept the dictum of Mr. Goschen, that we will not be left behind in the naval race; and our long-cherished supremacy at sea is not likely to be overtopped for some time to come. The honour of claiming the first salute at sea has, undoubtedly been won by fight. The list of naval achievements awards the palm to England for number and brilliancy. The first sea fight on record is that between the Corinthians and the Corcyreans, 664 B.C. But it was our renowned Arthur, A.D. 506, who first claimed the supremacy for England, which was confirmed and upheld by Alfred, who flourished from 871 to 890. He defeated the Danes in fifty-six pitched battles, and they must have had considerable naval power, seeing they invaded the Thames with 350 sail of ships. The sovereignty of England was maintained by Solden. The Dutch made some attempts to dispute it, but were so thrashed by Blake, and other English admirals, that they agreed to strike to the English colours in the British seas, in 1673. The flag-salute was also formally assented to by France in 1704. As the old sea song has it:—

> I don't wonder much, at the French and the Dutch,
> So often attempted to try-land;
> But I wonder much less, they have met no success,
> For why should we give up our island?

Russia, and other powers, armed to avoid search, in 1780, and again in 1800. But the destruction of the Danish fleet, at Copenhagen, in 1801, by Nelson, caused that power to secede, and acknowledge the claim of England to the empire of the seas; and the "Armed Neutrality," as it was called, soon after broke up. The salute at sea embodies the

maxim that a less number of guns is required to be fired by the party *receiving* the salute. The English claim the first salute, as sovereigns of the seas, in all places; but the Venetians claim it for their own gulf.—See Hadyn, Blair, &c.

Waste of Seamen.—We wish some of our mathematical readers would furnish us with calculations as to the annual waste of British seamen. What we mean is this—given 200,000 merchant seamen (we may take that as a fair number for our purposes, because that, in round numbers, represents the seamen of ships registered in the United Kingdom), how many will be lost to the sea service? (1) By drowning, we may put that at 3,000; (2) death from other causes; (3) taking employment ashore. At a very moderate computation we arrive at the conclusion, that 35,000 boys must always be kept in training to supply the annual waste of about 10,000, that is to say, if we are to man British ships by trained British seamen, we must have 35,000 boys under training or apprenticed. The number of apprentices now enrolled annually is 4,000. Six thousand must now come from elsewhere. The number of foreigners now in our service is 9 per cent., that is to say, 18,000 of the whole number, or about 3,000 a year. These figures do not include the crews of our colonial ships, but merely of those registered in the United Kingdom. For our ships alone our computation is that about 10,000 men leave the sea service every year, of whom 3,000 are drowned, and 10,000 fresh hands enter it. These numbers are subject to correction and modification, because we are not aware of any return or figures on which an absolute conclusion can be arrived at. It is curious that in a maritime country like ours we should be in ignorance of the true state of the case.

Freight.—Detention of Vessel.—The "Hope."—Christiensen v. the Oil and Seed Crushing Company.—In an action by a Norwegian shipowner against an English commercial company for freight and damages for the detention of his vessel, it appeared that in January, 1871, the plaintiff entered into a charter-party with the defendants to send a ship of his of 500 tons to Alexandria to bring a cargo of cotton-seed. Under the charter-party, the vessel was "to proceed to a safe port in the United Kingdom or the Continent, between Havre and Hamburg inclusive, where she can lie afloat at all times of the tide . . . or as near thereto as she can safely get." Orders were to be given by the charterers' agents at Falmouth; and when she touched there for orders in June, 1871, orders were given to proceed to Dover, but to this the captain objected, on the ground that the vessel could not lie there safely. All the days allowed for unloading having elapsed, the captain unloaded the cargo at Falmouth, refusing to go to Dover, and the charterers refused to pay freight, as the cargo, which had been detained for freight, had not been carried to the

port directed. Cross actions were thereupon brought by the charterers for detaining their cargo, and by the shipowner for detaining his ship; the charterers claiming the value of the cargo, and the shipowner freight and damages for detention, amounting, with charges, to £1,260. The question in both actions was a nautical one—viz., whether Dover is or is not a safe port, or a port where a vessel of the given burthen (drawing 16 feet) can safely lie afloat at all times of the tide. The question, as was observed by the Lord Chief Justice, was simply whether there was a buoy in the port at which the vessel could have been safely moored. Upon this point it was admitted that a vessel could not lie safely out in the sea; but it was insisted on the part of the defendants that it might have been safely anchored at the Admiralty Pier. This, however, was contested, and the most contradictory evidence was adduced by both parties. In the course of the trial the Lord Chief Justice pointed out that the question was one of pure fact—could the vessel have been safely moored at Dover. Upon that question of fact, numerous witnesses were called, whose evidence occupied many hours. After hearing most of the defendants' evidence the jury intimated that they had quite made up their minds that Dover was not a safe place for a vessel of the size of the plaintiff's ship, and consequently the verdict was entered for the plaintiff for the sum of £695, subject to a point reserved, as to whether the Declaration quite met the case.—Court of Queen's Bench, sitting at Nisi Prius, before the Lord Chief Justice, Dec. 17.

A Captain Fined for being Drunk.—The master of the Monks' Ferry steamer *Severn*, belonging to the London and North Western and the Great Western Railway Companies, was charged with being drunk whilst in command of his boat, on her trip from Liverpool at 3.20 p.m., on the 27th December, and thus endangering the lives of the passengers. The prisoner was fined £10, or in default of payment to be imprisoned for two months.—Birkenhead Police Court, December 28th.

ORIGINAL PROBLEM.

Communicated by Mr. John Williams White, Navigation School, Bristol

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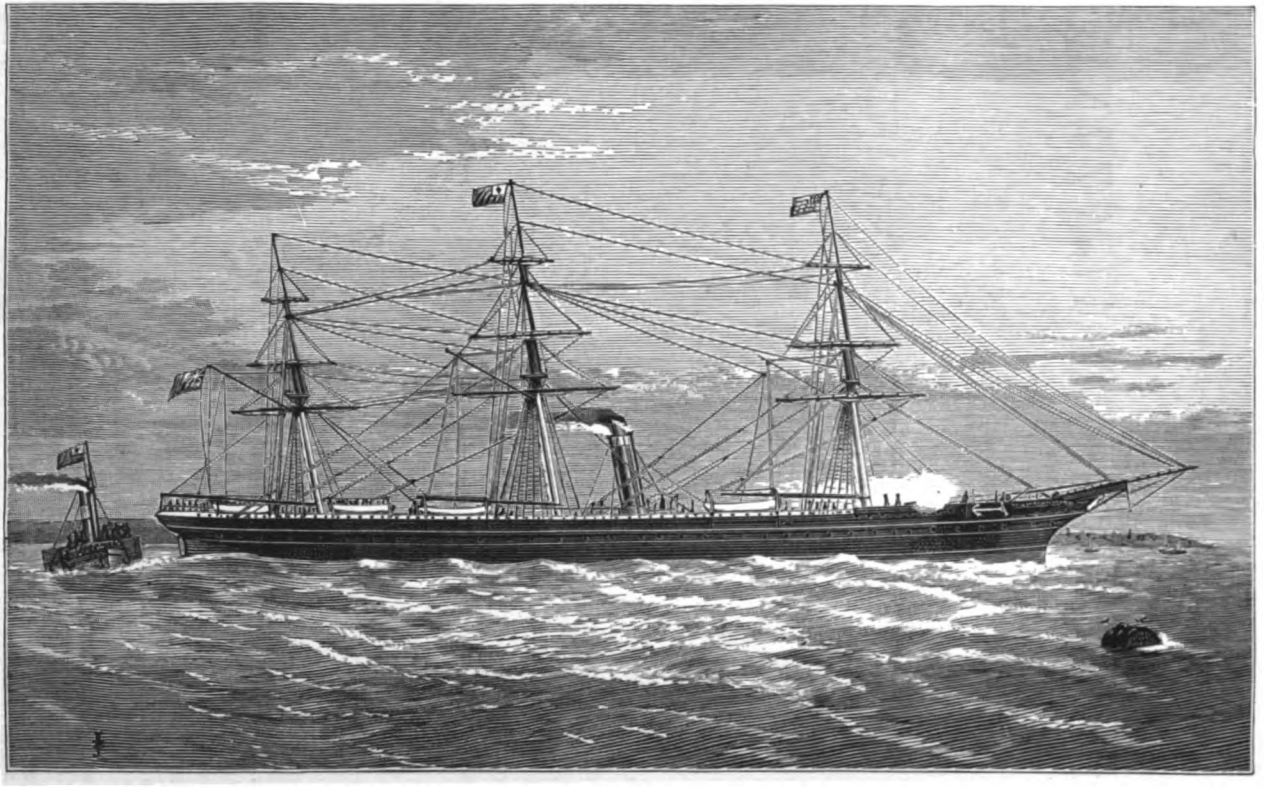
The Lizard is in lat. 49° 57′ 7″ N., long. 5° 12′ W.; the Eddystone is in lat. 50° 10′ 9″ N., long. 4° 16′ W. Two yachts sail from the Lizard and Eddystone respectively at 10 a.m., at an hourly rate of 9½ knots. Find the course each yacht must steer to form an equilateral triangle, having as its base a line joining the Lizard and Eddystone. Find also the latitude and longitude of the position where they met (the apex of the triangle), also the time of meeting.



INMAN LINE.—ATLANTIC PASSAGE, 7 days, 22 hrs., 3 min. (mean time).

THE

NAUTICAL MAGAZINE.

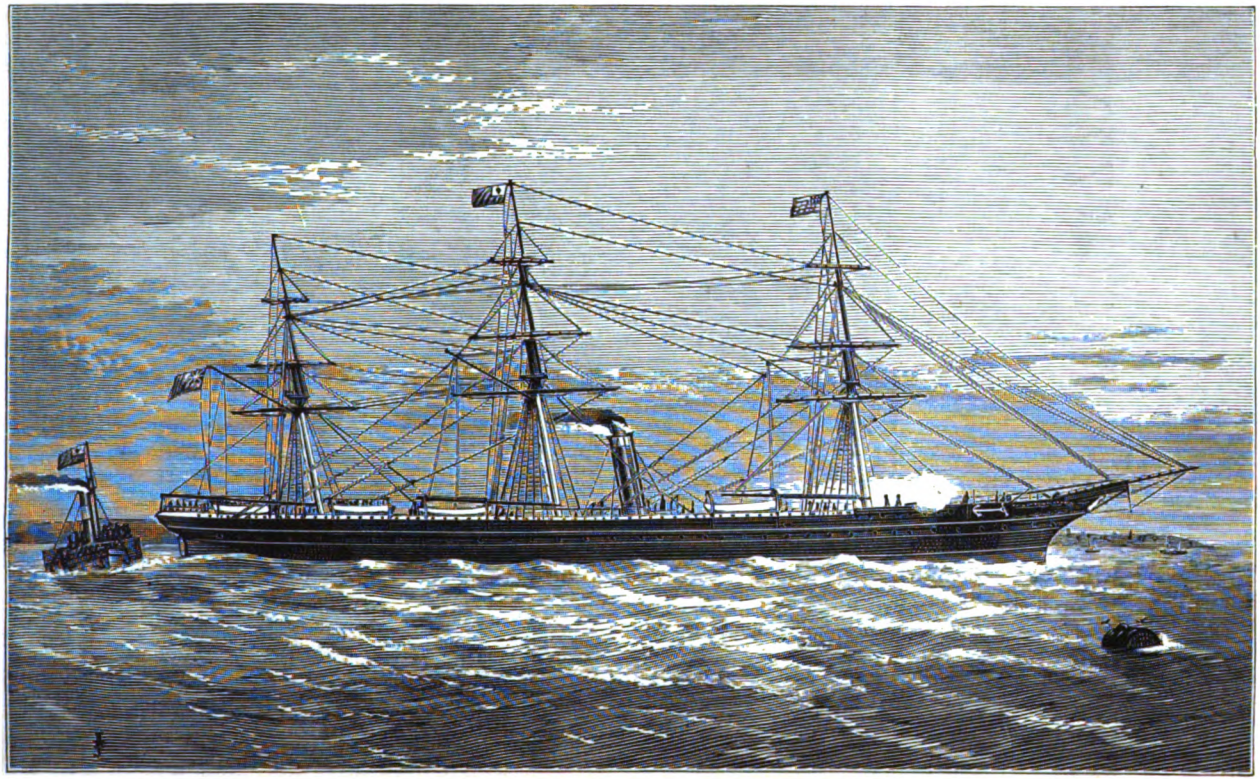
NEW SERIES.

APRIL, 1873.

ARBITRATION.

"Look here, upon this picture, and on this."

In our number for December, 1872, we expressed our opinion as to the good likely to result from international arbitration; and, if in the end Great Britain be bound to admit that our American cousins have got a million sterling out of us by the Geneva award, more than they ought to have obtained, it will prove nothing against the principles we advanced in December last. Although such a circumstance would prove nothing against international arbitration in the abstract, it would, however, point to something of great importance to the success of arbitration—viz., that claims presented in lump sums, claims got up in a slip-shod manner, are untrustworthy and suspicious, and it would establish beyond dispute that the details of all claims set up by one nation against another should not be admitted in court unless first carefully criticised and settled and vouched for by the Government of the country preferring them. Unless this is done in future, the Government of the country preferring the claims for damage alleged to be done to its subjects, will be liable, at the very best, to a charge of slovenliness; and the Government paying them will be open to the charge of softness. We are led to make these remarks in consequence of a recent reperusal of two important Parliamentary Papers—one the correspondence that passed in the case of compensation paid for the British collier ships sunk by the Germans in the Seine; and the other



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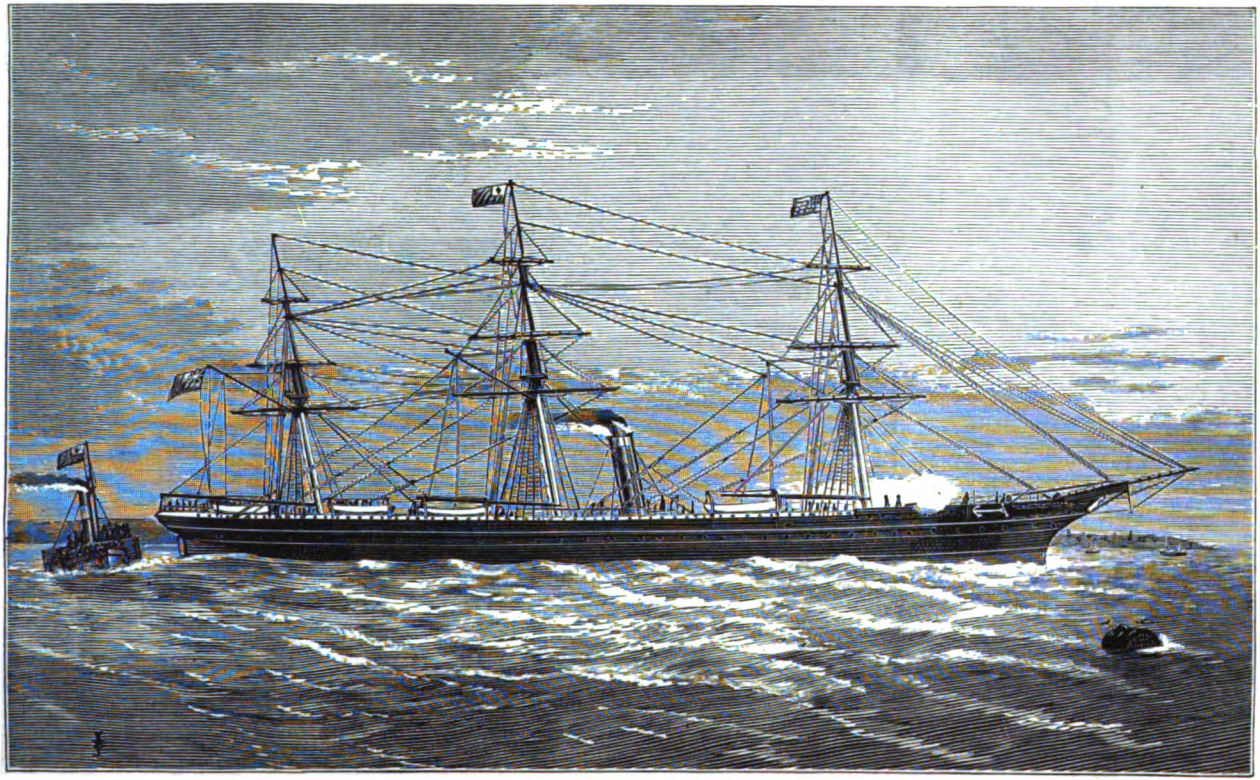

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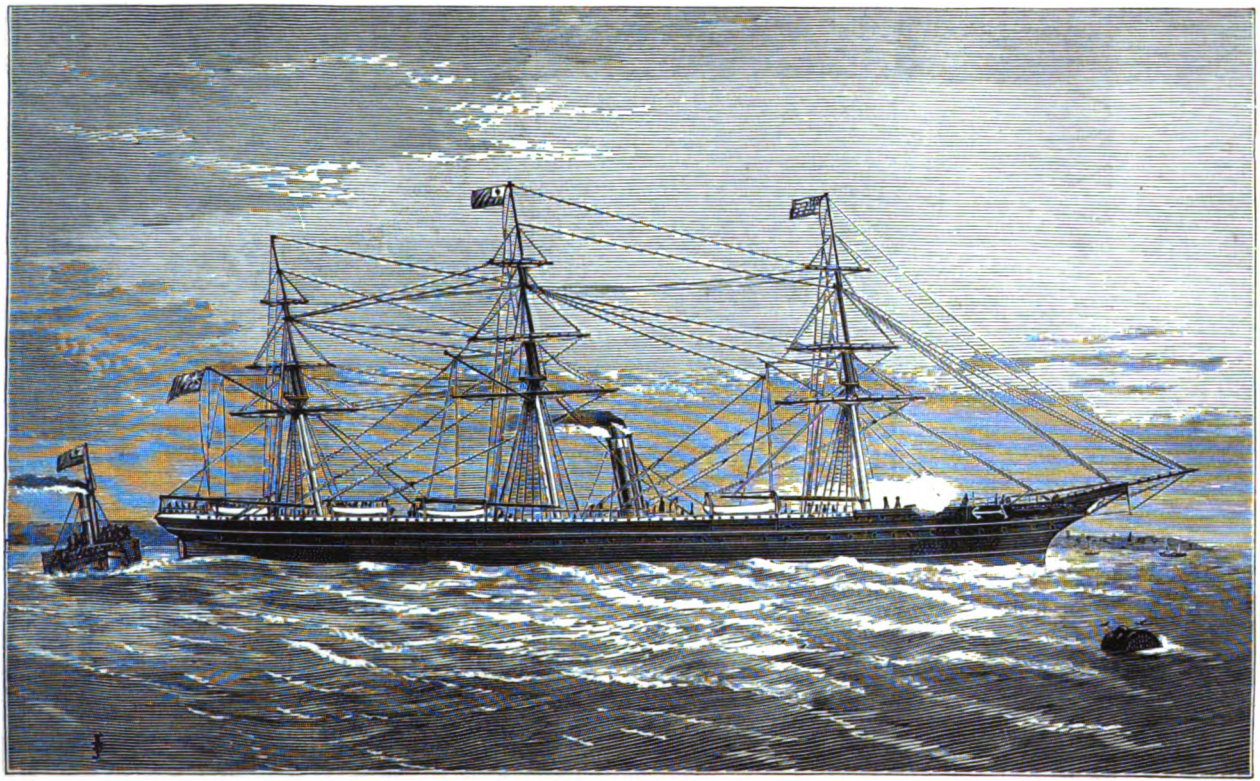

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the celebrated Alabama volumes. The first point of contrast is the pithy conciseness of the former as against the voluminous wordiness of the latter. The former is a piece of official work done by two or three civil servants, quietly and well, and never discussed because never heard of. The latter has been and will be discussed *ad nauseam*. It was because the former (the Seine case) was conclusive that no person ever discussed it, and for the same reason it is likely to remain, as it were, in oblivion, until some student of history may unearth it. This is often the case in our world. Things done well and leading to the prompt settlement of grave questions, and effecting good without ostentation, attract no one, whilst others, not so managed, attract attention, and sometimes the wonder of the whole world. In the case of the British ships sunk in the Seine, it appears from the papers, that Earl Granville handed the matter over to the Board of Trade, and it was that much, and we think, often improperly abused department, acting with the assistance and advice of the learned Registrar of the High Court of Admiralty, that settled the matter. The settlement was as complete as it was unimpeachable. The work of two or three unobtrusive men, labouring without special remuneration, without recognition, and as a matter of daily routine, is in this matter but just beginning to be known. These men wrote, and gave their opinion, in a full consciousness of their own strength, and this being the case they did not fear to cut down, or to stigmatise, and expose some of the claims put forward by their own countrymen. Had the United States Government followed the same wise course of mercilessly investigating claims before presenting them at Geneva and, of cutting out questionable and excessive demands, they would have effected more to impress the world with the possibility of international arbitration, than can now be done by any amount of friendly speeches and other expressions of mutual goodwill. To enable our readers to comprehend what really was done in the way of sifting, preferring, and settling British claims in the German cases, we reproduce two reports from the Parliamentary paper, No. 390, 1871. It is curious that so important a paper, presented by command of Her Majesty to both Houses of Parliament two years ago should only now attract attention, and should never once have been referred to in the public press; but, as we said before, this apathy can only be accounted for by the fact that the work was well done, and, therefore, as an inevitable result, no one noticed it, for no one could make capital by picking it to pieces.

Memorandum, No. 1, respecting the English Colliers sunk by the Germans at Duclair. Compensation to be paid to Owners, &c.

In each case a document was given to the master of the ship by a

German military officer. This document was given for the purpose of establishing the fact as against the German Government that the vessel named in it had been required, and taken for purposes of war. In this document the German military officer acknowledges to have received the ship of the name given, and alleged by the master to be of the value named. This allegation of value by the master is no proof whatever of the real value of the ship. It is merely a bare allegation, and is disregarded in all cases by the Germans, and in one case by the owner of the ship. It is not rejected in other cases by the owners, as it would, if accepted by the German Government, give the owners a sum far in excess of the most extravagant valuation of the ship. The allegation of value by the master, as bearing on the question of actual value of the ships, must be entirely disregarded by us in attempting to arrive at a settlement.

We have now to commence the question of valuation *de novo*. In order to arrive at values we have consulted the Association at Lloyd's employed largely in valuations, and the values they give are the following:—

Ship	Age.	Tons.	Gross value given by Valuers.	Value per Ton given by Valuers	Owners Claim.
			£	£ s.	£
Alice ...	20	160	560	3 10	2,400
Ann ...	10	147	882	6 0	1,824
Jane Tindall	21	159	636	4 0	1,800
Jessamine ...	16	214	963	4 10	2,500
McLaren ...	19	178	712	4 0	2,000
Sally Gale ...	11	153	765	5 0	2,800
Sylph ...	53	138	414	3 0	2,000

The values given by the valuers we have employed through the Salvage Association of Lloyd's are given as fair approximations of the values to be placed on the ships at the time they were sunk, on the assumption that the ships and equipments were in good order and fair condition. The assumption that the ships were in good order and in fair condition is, perhaps, right in such a case, although it is not likely they were altogether so. In fact, in one case we know that a boat was too far gone to carry the effects of the crew. That the values given to us by the Salvage Association would not be unfair as against the owners, if the case were an ordinary case, is proved by the fact that of three ships, in which the German Consul at Sunderland has obtained valuation from an independent source, they come very near to the values given to us; for example:—

	Value given by Salvage Association.	Consul's Value.
Alice	£560	£625
Jane Tindall	636	525
McLaren	712	700
	£1,908	£1,845

We may proceed on the assumption that the valuation given to us affords a fair statement of the then market value of the ships; and, looking to the fact, that the sale to the Germans was a forced sale, and a sale that has really put the owners to some inconvenience and loss or expense, the question is, whether something more than the values given by the valuers should not be demanded; for, even if these ships were regarded lost or wrecked, the insured value, which is by no means the actual market value, would have to be paid. I think we ought rather to look on this point as if paying for something in excess of insured, rather than of market value. The market value we know, but the value to the owner is, especially in the case of the older vessels, above the market value. The sums claimed by the owners are, of course, absurd, and altogether out of the question; and we must, under all circumstances, advise the payment of some reasonable sum between the valuation fixed by the valuers, on the one hand, and on the demand by the owners on the other. On the question of the amount to be paid for the ship, Mr. Rothery will be best able to advise. Perhaps something like the following may be fair:—(*a.*) We are not bound to supply new for old, but we must (*b.*) Make a liberal allowance, looking to expense and inconvenience to owners, and to the circumstances in which the ships were taken. Suppose, therefore, we take the valuation of our valuers, and add a certain sum in each case for forced sale, somewhat as follows, viz.—

Tonnage.	Names.	Age.	Per Ton.	Value as given by our Valuers.	Additional for Forced Sale.	Amount to be paid for Ship.
			£ s.	£	£	£
160	*Alice* ...	20 years	3 10	560	+ $\frac{1}{3}$ 186	say 700
137	*Ann* ...	9 ,,	6 0	882	+ $\frac{1}{5}$ 176	,, 1,000
159	*Jane Tindall*	21 ,,	4 0	636	+ $\frac{1}{3}$ 212	,, 700
178	*McLaren* ...	19 ,,	4 0	712	+ $\frac{1}{3}$ 237	,, 900
214	*Jessamine*	16 ,,	4 10	963	+ $\frac{1}{4}$ 240	,, 1,100
153	*Sally Gale*	11 ,,	5 0	765	+ $\frac{1}{4}$ 191	,, 950
138	*Sylph* ...	53 ,,	8 0	414	+ $\frac{1}{3}$ 136	,, 550
						5,900

Assuming, then, that the ships are delivered to the German Government as purchasers, and that the above is the amount of purchase-money, the further question for consideration is, whether anything, and if anything what, is due in addition by the Germans on account of the delay in settlement. The additional sum due to the owners would appear to be interest on the value (*i.e.*, his capital) for the time during which payment has been and is delayed. That interest ought probably, in the present case, to be at the rate of (say) 15 per cent. per annum; but on this point Mr. Rothery will be able to advise us. Having fixed a liberal sum for value of ship, and having allowed fair interest on the capital for delay in settlement, we shall, I think, be right in disregarding every other claim advanced by the owner on account of the ship, such as wages, provisions, loss of employment, loss of freight, &c.

Distinct from the values of the ships is the value of certain chalk ballast actually on board some of the ships. This ballast (a peculiar sort of chalk) is a valuable commodity in the Tyne, where it is used in making glass. We are advised that the ordinary price per ton in the Tyne varies from 2s. 6d. to 5s. We are also advised that, owing to the detention of the seven vessels, the supply of the material was short, and that, probaby, as much as 10s. per ton might have been obtained for any of this material arriving in the Tyne at or about the time that these ships were seized. Some of the owners claim from us not only the cost to them of the ballast at Rouen, but also the price, 10s. a ton, at which they allege that they could have sold it in the Tyne. We must, however, disregard the 10s., and, if we entertain the claim at all, entertain it at the usual selling rate, which, as we are advised, varies from 2s. 6d. to 5s. If we entertain it on the highest usual selling rate, viz., 5s. we shall be acting liberally. The profit at this selling rate would certainly not amount to more than half of the sum realized by sale. The German Consul at Sunderland offers 2s. 6d. per ton. If we assume that the owners would have made, and have really lost, a profit of 2s. 6d. per ton, and if we recommend that sum, *plus* interest for three months, I think we shall be behaving liberally: for we shall be acting as if the cargoes really did arrive safely, without any of the delays and risks incidental to the voyage.

There will be further expenses—viz., legal expenses, noting protests, &c., and these we may, without going into details, take at £5 each ship all round for the men, and as some of the men have employed lawyers, we ought perhaps also to claim for their law expenses, say £2 10s. each where a lawyer has been employed, but on this point Mr. Rothery can best advise.

The transfer of these seven ships to the Germans, if regarded strictly, can only, so far as regards the termination of the service of the masters

and crews, be regarded in the same light as any other change of ownership. The owners were entitled to sell their ships at Duclair to any one, at any time, and unless the masters and crews would be entitled to compensation for loss of employment had the ships been sold in the ordinary course of business, it is difficult to understand how they can be entitled to compensation for loss of employment now. It appears that the masters and crews were paid by the run, and have not suffered any loss of wages in consequence of the change of ownership, and, as regards loss of employment, they are in no worse a position than if the service had been terminated abroad by ordinary sale or by wreck. I think we must at once reject all claims for compensation for loss of employment. But the masters and crews have, beyond their alleged claims for compensation, claimed also for effects alleged to have been lost or stolen. Now it appears that the German authorities gave the British masters and crews ample time and ample opportunity for removing their effects. The German Government allege that the effects were all taken away. That some considerable quantity of effects were removed we have conclusive evidence, for we have paid for their conveyance from one railway station to another in this country; and this being so, it is not reasonable to suppose that if all were not they might not have been removed. It is a remarkable thing that many sailors who contrived to take away cumbrous articles of clothing, and the master who took away a clock, omitted to take their watches and Albert chains or cash. I cannot help looking upon these claims for effects, both by masters and crews, as excessive, and to a great extent trumped up. Evidence is altogether in favour of the German authorities on this point; and I do not think that a single claim can strictly be sustained for loss of effects by either masters or crews. At all events, if either masters or crews wish to press their alleged claims, we must leave them to do so in their own manner, and in the best way they can, without our help. If the effects were lost, it was the fault of the men themselves, and not of the German authorities. There is one case, *Sylph*, in which one of the men admits that he saved his things, but alleges that the diligence was robbed by German soldiers afterwards. On this point we can, if necessary, make inquiry of the German authorities; but that case goes to prove that the men not only had time to save, but actually did save their clothing, and lost it afterwards. In the same way, in another case, a master got his effects, and he says, £20 in cash, into a boat. This boat, with others, was being towed down the Seine. In each boat was a British seaman. It appears that one boat was unseaworthy, and was cut adrift; but it does not appear, nor is it likely, that the effects were sent adrift also. At all events, if they were, it would be difficult to see how the Germans could be held reponsible for the loss,

considering that a British sailor was in the boat, and had the assistance of British sailors in the other boats. Under all the circumstances, if the German Government give the masters £15, the mates and carpenters £10, and the seamen £5 a-piece all round, they will be doing enough. I have spoken to Sir W. H. Walker, who advises that in the case of the masters of these colliers, they would be exceedingly unlikely to have more scientific instruments than a sextant and a few charts.

We shall have to take out from our accounts various items for travelling, and subsistence, and valuations, which the German Government will have to pay to us in addition.

(Signed) T. G.

Memorandum, Number 2, relative to the Claims against the German Government for the British Vessels sunk in the Seine.

I have carefully perused all the papers which have been sent to me, and have, in accordance with Mr. Farrer's suggestion, shortly stated my opinion in the margin, on the several points as they arise in Mr. Gray's very able paper. I think, however, that it will be well, looking at the importance of the questions raised, that I should give a full statement of my views upon the whole subject. And the question to be considered, is what is the principle on which the damages ought to be assessed?

It seems now to be generally admitted that the German Government were entitled, provided that they made full compensation to the owners, to take possession of these vessels, and to sink them for the purpose of protecting themselves against the hostile attacks of the French vessels of war; and, moreover, that in the exercise of that right they committed no unnecessary, arbitrary, or offensive acts, although the contrary was at first affirmed. Mr. Candlish, in his letter of the 11th January, says that he had had personal interviews with the masters of the *Jane Tindall*, *McLaren*, and *Alice*, and that they had all declared that they had "not been subjected to any personal indignity, nor suffered any hardships at the hands of the Prussians, that their vessels were not fired at, but that the firing was merely a notice, or request to bring up;" and "that they never saw the British flag trampled upon by anybody." The master of the *Jane Tindall*, also, who had, in his protest, accused the Prussians of "brutal and insulting" conduct, in his petition observes that "although he considered the act done to his ship was brutal and insulting, as stated in his protest, he admits that every civility was shown by the Prussian soldiers, supposing their acts to be legal." It is, therefore, clearly not a case for penal, or, as it is sometimes called, vindictive damages; on the other hand, the parties are entitled to a full and liberal compensation for the losses sustained, or *restitutio in integrum*, and that, as I understand, the German Government are willing to give. The claims

preferred may be said generally to include the values of the vessels, and of the cargoes which were on board, or were about to be put on board; compensation to the owners for having been forcibly deprived of their property; and compensation to the master and seamen for the loss of their employments. These points I propose to consider separately. 1. And first as to the values of the vessels. The claims preferred by the respective owners for the losses of their vessels are, as Mr. Gray observes, "far in excess of the most extravagant valuation" that could be put upon them. And it appears to me that the course taken by the Board of Trade is the very best that could, under the circumstances, have been adopted; they referred the matter to Lloyd's Association, who appointed two of their surveyors, than whom there could not be more competent persons to value these vessels. And, so far as I am capable of forming an opinion on the point, I should say that the sums which have been placed upon them by these gentlemen are fair estimates of their values, that is to say, of the amounts which they would respectively have "realised if sold." They certainly vary greatly from the estimates preferred by the owners, being not more than about one-third, or one-fourth thereof, but those estimates are, as I have already said, extravagant and absurd in the extreme; and when the ages of the vessels are looked at, and the fact that with the exception of the *Ann*, not one of them was classed, I think that it will be admitted that the estimates of the surveyors are not far out. One of them, the *Sylph*, was fifty-three years old; she had originally had only a second class, which had expired about 1825, and for this vessel the surveyors allow £3 a ton. Another, the *Alice*, was twenty years of age, but had not been classed since 1863: for her they allow £3 10s. a ton. For the others, whose ages vary from eleven to twenty-one years, and who were all off the letter, they allow from £4 to £5 a ton; whilst for the *Ann*, which was ten years of age, and had been re-classed in 1868, for five years, they have allowed £6 per ton. On the whole, it appears to me that the surveyors have very fairly estimated the prices which these vessels would probably have realised had they been sold in market ouvert. But although the above may properly be considered to be the values of the vessels, in the sense in which the surveyors use that word, namely, the price which they would have realised on a forced sale, I quite concur with Mr. Gray that the owners are entitled to something more than that. In the case of a total loss by collision, which it appears to me stands very much upon the same footing as the present, what we do is to allow something over and above the value which would have been obtained by a forced sale, to compensate the owner for the inconvenience and loss to which he will necessarily have been put by having been so suddenly deprived of his vessel. What that increase should be it is not always very easy to say. The German Consul has proposed

that it should be at the rate of 25 per cent. on the estimated values. This I consider to be a most fair and liberal offer, and is, in fact, more than I should have been inclined to award. As, however, the offer has been made, I see no reason why it should be refused. Taking, then, the estimates given by Lloyd's surveyors, and adding in each case 25 per cent. we shall obtain values which will fully compensate the owners, not only for the loss of their vessels but for having been suddenly and forcibly deprived of them.

2. As to the values of the cargoes. It seems that all these vessels were engaged for the round voyage; their intention being to carry a cargo of coals to Rouen, and to return with cliff chalk, an article much used in the glass-works on the Tyne. This is what they would have done in their ordinary course had they not been seized by the Germans. All had, before they were seized by the Prussians, discharged their cargoes of coals at Rouen, and had consequently earned their outward freight, and all had taken in their cargoes of chalk except the *Jessamine* and *Sylph*, who were seized before they had time to do so. Now, in the case of the five vessels which had taken in their cargoes of chalk, the claims preferred by the owners are, first, for the cost price of the chalk, the cost of putting it on board, the wages of the crew, and the provisions which they would have consumed on the return voyage; and, in addition, they claim the sum which it is stated that they would have realised by the sale of the chalk on its arrival in the Tyne. The claim is, in its way, as extravagant and outrageous as the claim for the vessels, and seems to have been made out either in total ignorance of all mercantile usage in such matters, or possibly in the expectation of such ignorance on the part of those who would have to deal with the claims. I may here observe that there are two modes of estimating the value of a cargo at its port of destination; either we may take the price which it would probably realise at that port, or, which will come to the same thing, we take the first cost of the cargo at the port of shipment, add to it the charges of conveyance, such as the freight, which would include the wages and provisions of the crew and wear and tear of the ship, the port charges and cost of discharging the cargo, and with a reasonable allowance for the merchant's profit, we arrive at the value of the goods at the port of destination. So also to ascertain the value of a cargo lost *in transitu*, either we take the probable value at its port of destination, and deduct from it the charges which would have been incurred to get it to its destination, but which were not incurred, owing to the sinking of the vessel, such as the balance of the seamen's wages after the loss of the ship, the port dues, discharging fees, commission, &c., or, on the other hand, we take the first cost, add to it all the charges incurred up to the time of the loss, and, with a fair allowance of profit, we obtain the amount of the owner's loss. But

what the claimants have done in these cases is to charge not only the amount which they say they would have realised for the cargoes on their arrival at the port of destination, but likewise all the charges which they must have incurred in order to realise those amounts; in other words, they have charged for the cargoes twice over. The claim is quite preposterous. In the case, then, of the five vessels which had their cargoes on board, if we give them the prices which they would probably have sold their cargoes for at the port of destination, less the port dues and discharging fees, which were not incurred by them, we shall be giving them all that they could have any right to claim. To realise the values at the port of destination, they must have incurred all the charge of the first cost, of conveyance, &c. Now it would seem that this chalk usually fetches from 2s. 6d. to 5s. a ton. The owners, however, say that owing to the detention of these vessels by the Germans there was a scarcity of the article in the Tyne, and that it rose to about 10s. a ton; and that is the rate at which they now claim. But here, again, it appears to me they are under a misapprehension. What the owners are entitled to is the amount which they would have realized had their vessels not been detained by the Prussians. Now, if the vessels had not been detained, there is no reason to suppose that the price of this chalk would have been enhanced, or that its value would have been more than from 2s. 6d. to 5s. a ton. That, therefore, is all that they are entitled to claim; it is, in fact, all that they have lost by the detention. For it must be remembered that the claimants in the present case are not the glass manufacturers, who might perhaps justly complain that by reason of the detention of these vessels they had been obliged to pay an enhanced price for the article, but they are the owners of the vessels who claim to be compensated for the loss which they have sustained by not being allowed to carry on their cargoes to their destination. Taking, then, the value of these cargoes at the port of destination to have been something between 2s. 6d. and 5s. a ton, and allowing for the port dues and the charges for unlading, which the owners would have had to incur to realize that sum, but which they were saved by the detention of the vessels, I think we may fairly estimate the loss which the owners of these five vessels sustained in respect of the cargoes which they had on board at, say, 3s. 6d. a ton, and that is the sum which I should be disposed to allow them. In estimating the value in this manner, we need take no account of the cost price of the chalk, or of the wages or provisions which would have been consumed on the return voyage, for, as I have already said, all these charges must have been incurred by the owners to realize the price at the port of destination. Nor can any allowance be made for any surplus stores which it might perhaps be thought would remain after the termination of the voyage, and which would have been lost

with the vessels, for the probability is that there were not any such surplus stores; it is more than likely that the vessels, being bound to a home port, would only have on board sufficient provisions for the return voyages; and it is not reasonable to suppose that they would have taken in a superfluous stock of provisions at Rouen when they were bound to a home port, where all kinds of ship provisions would be cheaper. So far, then, as regards the five vessels which had cargoes of chalk on board. As regards, however, the two which had not yet taken in their cargoes, the case is somewhat different. It may fairly be assumed that these two vessels, had they not been seized by the Prussians, would, in their ordinary course, have taken in chalk with which to return to the Tyne; they would count upon it as part of the profits of the voyage. Like the other five vessels, their crews had been engaged for the round, and they would, no doubt, have had on board a sufficient stock of provisions for the return voyage. The only distinction between them and the five other vessels would be that they had not, when seized, incurred the expenses of purchasing and shipping the chalk. These expenses I find, from an examination of the accounts, to be something under 1s. a ton. Now the amount which it is proposed to give to the five vessels in respect of the loss of their cargoes is 3s. 6d. per ton, that is to say, 1s. per ton for the cost price and expense of shipping it, and 2s. 6d. per ton profit. And as the owners of the *Jessamine* and *Sylph* were, by the seizure of these vessels, prevented earning this profit, there seems to be no reason why they should not be reimbursed to that extent, and in that case the sum to be allowed them would be at the rate of 2s. 6d. per ton on the quantity which they would probably have carried.

3. A further question seems to have been raised whether the owners are entitled to anything beyond the full value of the vessel and cargo, the *restitutio in integrum*, on the ground that if they had not been deprived of their vessels, they might have continued for some months or years to carry on a prosperous trade, and have realized large profits therefrom; one gentleman claims specifically on this ground the anticipated profit of several subsequent voyages, and all of them claim it indirectly in the extravagant amounts at which they have estimated the values of their vessels. But the claim, whether in the one shape or the other, seems to me to be quite inadmissible. The principle which governs cases of this description was very clearly laid down by Dr. Lushington in the case of the *Columbus*, reported in 6 Notes of Cases, p. 671. It was the case of a fishing-vessel, which had been run down and utterly lost, and the owner, who was also the master, claimed, the smack having been his sole means of support, a sum of £89 for wages and victualling, and £75 for twelve months' average profit, which would have accrued to him from the usual employment of

his smack. But Dr. Lushington rejected the claim, saying, "I take the rule to be this; in the case of a total loss you calculate the value of the property destroyed at the time of the loss, and pay it to the individual as a full indemnity to him for all that may have happened to him, and you never can, by possibility, enter into an examination of what might have been gained, or, on the other hand, lost, by an adventure of this kind." And the reason is obvious, for no one can say with certainty whether in any future adventure, for which there is no express contract, the shipowner will make a profit, nor what that profit will be. If there is an express contract for the hire of the ship, you can no doubt estimate approximately the profits of the voyage, but if there is no such contract you cannot do so, and the adventure, instead of giving a profit, may result in a heavy loss. It is, therefore, in practice found better to allow the shipowner interest on his capital at the current rate from the termination of the voyage on which he was engaged, until the time when the compensation is paid to him, rather than to speculate upon the possible profits which he might make in future voyages. In the present case the vessels would, had they not been siezed, have returned to the Tyne, and they would probably have been again available for employment by their owners, say by the end of the year. Up to that time, of course, I should not allow any interest, as it is proposed to allow them the profit which they would make upon the chalk, which is another form of interest. But interest, it appears to me, is due in all these cases, say from the 1st of January until the time of payment; and, looking at all the circumstances of the case, I do not think that 5 per cent. per annum would be unreasonable.

4. A claim has also been preferred by some of the masters and crews, which is somewhat of the same character; it is for the loss of their employment by the destruction of the vessels. One man, the master of the *Jane Tindall*, says that he is sixty years of age, that he was earning £120 a year, and estimating the probable duration of his life to be about ten years, he claims £1,000 as compensation for having lost his employment; and he supports his claim by the somewhat curious argument that probably he will never find such employment again, "owing, amongst other things, to the fact that screw steam vessels are superseding sailing vessels," a class of vessels to which he had not been accustomed. In effect, therefore, he claims from the German Government £1,000, because screw steam vessels are superseding sailing vessels, and because he, the claimant, has not acquired the knowledge requisite to enable him to take charge of a screw steam vessel. The mate, too, of the same vessel makes a similar demand, claiming £600 for the loss of an employment of £80 a-year, he being now 62 years of age. Almost all the other masters and seamen

prefer claims on the same principle; but not, it must be admitted, to so extravagant an amount. It seems to me, however, that none of these claims can for one moment be entertained. Apart from the principle laid down in the *Columbus* just quoted, the contract with all these masters and seamen was for the voyage out and home, and the owners might, upon their return to the Tyne, have dismissed them without giving them any compensation. They had no right whatever to their situations, and might have been dismissed at pleasure.

5. The masters and seamen have also claimed for the loss of their clothes and effects, and although the claims are for the most part very extravagant, it appears to me that they are entitled to something. Except, however, in the case of the master of the *Slyph*, there seems to be no ground whatever for supposing that ample time was not given them to take out their clothes and effects, or, in fact, that they lost any large portion of them. As to their claims for watches and Albert chains, and nautical instruments, they are, of course, quite inadmissible. On the other hand, it is only reasonable to suppose, from their having been suddenly, and without notice, sent on shore at Rouen, and their conveyance thence to Dieppe, and to their homes, that their clothes, even assuming that they had saved them all, must have suffered to a certain extent, and for this they are, in my opinion, entitled to compensation. So little to be relied upon, generally, are the claims preferred by masters and seamen for their effects in the cases which come before me, that I have adopted a general rule, to be departed from only on very good grounds, to allow masters of these coasting and collier vessels a sum of about £35 to £40, mates and carpenters from £20 to £25, and seamen from £10 to £12, cover everything. I think, however, that in the present case the sums proposed by Mr. Gray would be fair and reasonable, namely, £15 for masters, £10 for mates and carpenters, and £5 for each seaman. In the case of the *Sylph*, however, I think that the master's claim might, under the circumstances, be fairly allowed at £30. These sums would, of course, cover everything.

6. There are also claims by the owners and some of the seamen for the services of lawyers employed by them to protect their interests. So far as regards the charges for preparing protest and obtaining certificates they are no doubt allowable; but beyond these charges I can see no necessity for the employment of any lawyers in these cases. The Government took up the cases immediately, and obtained from the German Government a promise of full and liberal compensation, and all that the parties had to do was to to furnish the British Government with a statement of their losses, which they could readily have done without the intervention of an attorney. Moreover, in the present case the claims preferred are so outrageous that I should be inclined to adopt the rule

which I always follow in this Court—namely, never to allow the claimant his costs when he puts forth a very extravagant claim as has been done in these cases.

7. It remains to say a few words in regard to the five boats sold by the masters at Rouen. I am not inclined to blame them for this, as they could not then have known that it was the intention of the German Government to give them full compensation for their losses, but when this had been agreed to, the German Government were clearly entitled to claim these boats, the masters repaying to M. Hautpois the sums which he had paid for them. As, however, it was arranged that M. Hautpois should keep the boats, it is clear that the value thereof should be deducted from the amounts, which the German Government will have to pay in the respective cases.

8. Lastly, there are the claims for travelling and subsistence money and valuations, which appear to have been advanced by the British Government. These, of course, will have to be added to the claims, and paid by the German Government. (Signed) H. C. ROTHERY.

Admiralty Registry, Doctors' Commons, April 4, 1871.

Representations were violently made that the Board of Trade, in adopting the two reports we have given above, were wantonly sacrificing British interests, and pandering to the Germans. Notwithstanding this our Government remained immovable; and with the results of the just and patient investigation as embodied in the two reports, held up its head in integrity and pride—knowing that whilst it had secured compensation for losses really sustained by British subjects, it had at the same time, effectually shut the door against any and every accusation or imputation of jobbery or excessive claims. This is the "picture" drawn from the "*Seine*" papers. Is the picture to be drawn from the *Alabama* volumes equally pleasing?

MUTINOUS BRITISH SEAMEN.—TREATMENT IN PRISON.—In Para Goal there is no hard labour. Our seamen, when they arrive at the Port of Para, first get drunk, and then riotous and mutinous, and of course get sent to prison. The prisoners all mix together, lie about in hammocks, read the newspapers, magazines, and periodicals, and altogether make themselves very comfortable. Life in prison under such circumstances is much better than life on board ship, and it is not therefore surprising that men are persuaded with some difficulty to leave the prison for the forecastle. A ship master just returned, gives us a very lamentable account of the effects of the native raw spirits on men who have just arrived from sea.

THE RESULTS OF RECENT METEOROLOGICAL INQUIRY.

A Lecture Delivered at the London Institution, Feb. 26, 1873, By Robert H. Scott, M.A., F.R.S., Director of the Meteorological Office.

Of all the branches of science there is not one which so entirely depends on the conjoint and harmonious co-operation of numerous observers as Meteorology. If we are to compare it with its nearest congener, Astronomy, we see that, while in the latter case, the range of subjects which an isolated observer can study, when there are no clouds, with a prospect of doing good work, is only bounded by the extent of sky visible to him in the course of the year; in the former, the phenomena which can come under the cognizance of the most enthusiastic meteorologist are strictly limited by the geographical position and the local conditions of his station, as to its elevation above the sea, as to the condition of the surrounding country, and even as to the very nature of the soil itself.

It is therefore self-evident that if by any means meteorologists, all over the globe, can be brought into personal relations with each other, important advantages in the prosecution of the science may be looked for, and the main tendency of our endeavours of late years has been towards the cementing of these ties of mutual co-operation and helpfulness.

This most desirable result has been greatly furthered by the several meetings and congresses of meteorologists which have been held at various times. I am glad to say that the commencement was made in this country, mainly at the instigation of Sir E. Sabine, at the meeting of the British Association at Cambridge, in 1845. Then followed the Congress at Brussels, in 1853, which dealt solely with marine meteorology; the credit of this assemblage is almost solely due to the indefatigable energy of Maury, whose recent death we are now deploring. From this Congress the systematic prosecution of Ocean Meteorology may be said to have taken its rise, and as it gave such a vigorous impulse to general meteorological enquiries, and prepared the way for the establishment of meteorological organizations, under the auspices of the respective governments of the civilised world, it will be convenient for us to take our point of departure, for discussing the results of recent meteorological inquiry, from 1853. At the present time, it is in contemplation to hold a Meteorological Congress at Vienna, in the course of this year, of which the aim is the more perfect organization of combined operations in the study of meteorology on land.

A Conference, preliminary to the Congress, was held at Leipzig, last August, which was well attended, but it was chiefly deliberative, in

order to define the subjects to be discussed at the General International Congress.

If I were to characterise, in a few words, the general results of our enquiries since 1853, I should say that if we except the development of meteorological telegraphy, which dates from about the year 1854, in France, we must admit that these results have not been marked by many startling discoveries, comparable with those effected in astronomy by the aid of the spectroscope, but are to be sought for principally in the correction and completion of the data on which the theories of former times were based, by means of more perfect instruments and improved methods of observing with them; and in the turning to practical account, for seamen in the first instance, and in a less degree for agriculturists, also, the conclusions to which the scientific study of the subject has led.

As an example of the former class of work, the correction of received theories, I may cite the recent investigation into ocean temperatures at great depths, which has modified all our ideas of marine circulation. This inquiry has been carried out during the successive cruises of the *Lightning*, the *Porcupine*, and the *Shearwater*, and is now being prosecuted on a scale of true magnificence by Professor Wyville Thomson, in the *Challenger*, thanks to the wise liberality of our Government.

A brilliant instance of results of the latter kind, the utilization of theoretical meteorology, is found in the well-known statement of Maury, that the average passage from both Europe and the United States to San Francisco was shortened from 180 days to 135 by the researches as to winds and currents which were conducted under his superintendence at the Naval Observatory at Washington. In speaking thus, I must not be understood to underrate our work, or to imply that its results have been either insignificant in quantity or unimportant in quality. I only mean to convey to you that, owing to the extreme complexity of their subject, meteorologists have not of late years arrived at any grand generalizations which have been at once accepted as incontestible.

It will perhaps be of interest to you, if, before taking up the subject of weather telegraphy, I proceed to point out the progress which has been made in the chief branches of our science since 1853.

Temperature will naturally come first, as its influence on climate, and on all the processes of organic life, is more immediate than that of any other meteorological element, and as, fortunately, our knowledge of its distribution over the earth's surface is, comparatively speaking, in a satisfactory state, it will give you a good idea of our present views on this distribution in a general way, if I explain to you the two isabnormal charts for January and July, which I have exhibited. The principle on which these charts have been constructed is, that as the temperature of the earth ought, theoretically, to decrease regularly

from the equator to the poles, and as we find that these conditions are not nearly fulfilled, in reality, it is of interest to show how much the temperature in each region of the globe has been ascertained to hang on one side or the other of its theoretical mean value. The charts are called isabnormal, as they show the lines of equal difference between the actual and normal temperatures.

Having thus seen what we know of the general temperature of the earth, it will be of more special interest to us to consider what we know of the temperature of our own islands. Mr. Buchan, of Edinburgh, of whose name there will be mention more than once in this lecture, has published an important paper on this subject, based chiefly on the returns issued by the Registrars-General for England and Scotland.

It must not be forgotten that Temperature, taken by itself, is not sufficient to account for the differences of climate which are found even over the limited area of the United Kingdom, and that we must take into consideration, along with the readings of the thermometer, the conditions of wind, rain, and cloud, &c., but yet isothermal charts will give a fair general idea of the broad features of the climate of the country. I have therefore, prepared two charts showing the course of these curves for the months of January and July. (These have been already described in the *Nautical Magazine* for 1872, p. 570.)

Recent results in respect of Atmospherical Pressure have been more striking than those first described in regard of Temperature; and here again we have to give the main credit to Mr. Buchan. It has long been known that the mean barometrical pressure at sea level is not the same all over the globe, as the remarkably low readings obtained near Cape Horn, and the uniformly high level of the mercury near the Tropic of Cancer, over the Atlantic, had attracted the attention of all. Mr. Buchan has earned the thanks of all meteorologists by having faced the enormous labour of determining the mean pressure for a large number of stations (360 in all), from which he has been able to draw monthly and annual isobaric charts. I produce the chart for the year, which is very remarkable, and, as we shall see later on, enables us to draw important conclusions as to probable winds.

It is, however, in connection with the wind that the most valuable additions to our knowledge have been made. You will all have heard of Reid and Redfield's Law of Storms, which is to the effect that the hurricanes of the West Indies and the Indian Ocean are storms in which the wind blows round a central area where the barometer is comparatively very low: and that the direction of its motion in the Northern Hemisphere is opposite to that of the hands of a watch. Prof. Buys Ballot, of Utrecht, has extended this rule to all winds, and has laid down a principle which generally goes by the name of his Law. It runs thus:—

"Stand with your back to the wind, and the barometer will be lower on your left hand than on your right."

This law shows us that the old idea that the direction of the wind is governed by the absolute height of the barometer at the place must be abandoned, and that, instead thereof, we must look to the *difference between the heights of the barometer at adjacent stations* in order to learn what the motion of the air will be. When we come to speak of weather, we shall see the all-important bearing of the considerations I have just described.

The winds have been a favourite subject of study with all meteorologists, and the arguments for and against Maury's theories were for a long time the theme of many a discussion. We may say that now-a-days his theories have been entirely abandoned, as no one at the present time believes in the complex system of interlacing currents which was propounded by the Naval Observatory of Washington. It has been found that Buys Ballot's Law holds good for the grand atmospheric currents, as well as for isolated wind observations, and so the chart which I have shown you exhibits not only pressure, but also wind, in its broad general features.

The most important work of our office, and that to which it owes its original establishment, has been pre-eminently the study of the winds. This enquiry is most diligently pursued by the Marine Department under my colleague, Capt. Toynbee, and as a specimen of the character of the results we are obtaining for the Mid-Atlantic for a small district of 10° of latitude and longitude, which is, however, the most important patch over the whole ocean, as regards making a passage to India or Australia; we find that in certain months of the year a navigator may find a route by following which he will sail through the square in seven or eight days, whereas if he keeps to the route, which is still adopted by many captains, he will probably have to spend thirteen or fourteen days in making the same distance good.

As regards rain, which has been studied most carefully for these islands by Mr. Symons; by means of the corps of observers which he has organized, the general tendency of discovery has been to show that the empirical rules so often laid down by engineers as to the variation in the amount of rain which falls, with height above sea level and distance from the coast are of purely local value, and that, in order to draw conclusions as to the probable amount of water to be obtained from any district for economic purposes, we must consider the general contour of the country about, and more especially the lie and height of all the hills and mountains in the neighbourhood.

Before we quit the subject of general meteorology, it may be of interest to you to hear what has been done of late years in the way of enabling

us to foretell the character of the seasons. One great difficulty which meets us at the outset is that we do not possess accurate meteorological records for more than about twenty or thirty years from any considerable number of stations, and so we are not in a position to say with certainty whether or not a certain character of the seasons has shown a tendency to recur after the expiration of any considerable number of years.

In default of direct meteorological evidence, it has often been attempted to take the price of corn in England as a test of the character of the seasons. Such discussions have been conducted without regard to the fact that for the last thirty years the price of corn has depended on the foreign far more than on the home supply. All such reasoning is similar to the statement that earthquakes are on the increase of late years, because a notice of every shock in any part of the world appears in every newspaper.

The most probable period for us in which to expect a recurrence of seasons is at the expiration of eleven or twelve years, inasmuch as, twenty years ago, Sir E. Sabine proved that this period, the well-known sunspot period, is also reproduced in the phenomena of terrestrial magnetism. Moreover, there is every reason to expect that the connection between meteorology and terrestrial magnetism will ere long be established. Meanwhile, a direct connection between the cycles of weather over the Indian Ocean, and the intervals of frequency of sunspots, has apparently been discovered by Mr. Chas. Meldrum, of the Mauritius. He has found that the cyclones, which are especially frequent over that part of the Indian Ocean, have been much more frequent every eleven or twelve years than at other times, and that this frequency occurs when sunspots have been most abundant. A similar periodicity is exhibited by the rain fall returns from the stations in that part of the world, as has been shown both by Mr. Meldrum and Mr. Lockyer.

This discovery, then, affords us some hopes of at least being able to establish a connection between all the various phenomena which belong to terrestrial physics.

The study of the Non-Periodic Variations, or, in plain English, of the weather from day to day, has been the department of our science, in which, more especially, we have signal progress to record. This has been almost entirely due to the facilities afforded for the construction of synchronous charts of weather by the extension of telegraphy. Isolated attempts to chart weather in the case of individual storms have been made for a long time by Loomis, Dove, and others, as well as recently by Buchan, Mohn, and Hildebrandsson, but the idea of collecting and publishing daily an account of the weather over a large area of the earth's surface was first propounded in the United States before the war. The credit of first carrying out the plan in Europe

belongs undoubtedly to Le Verrier, who first broached his plans about 1854, and on January 1, 1858, was publishing a daily bulletin of observations, to which he appended, on September 11, 1863, a chart, which at once attracted the attention of all who saw it. Admiral Fitz Roy commenced his reports in the newspapers in September, 1860, and these were first lithographed by us at the beginning of 1869. The issue of our present daily charts was commenced on the 1st of April, 1872, and their circulation at present exceeds 600 copies a day, of which about one-half go to subscribers, while one-half are supplied to Government offices, and for exhibition to sailors.

Russia, too, publishes a lithographed report, and in almost every country in Europe a daily account of the weather appears in the newspapers.

The telegraphic weather system of the United States is, beyond all comparison, the most perfect in existence. It is in connection with the Chief Signal Office at Washington, under the direction of General Myer, and these appear simultaneously in all the principal cities of the States. This is rendered possible by the fact that the telegraphic lines place their wires at the service of the department for a certain space of time every day. The splendid results attained are effected by utilizing the military organization of the country, and by a very liberal allowance of money. It is only fair to us to consider what the cost of this service is as compared with our own. The proportion of our annual vote spent on weather telegraphy is not more than £4,000, while the vote for the Signal Service is 250,000 dollars, or about £50,000.

Weather Telegraphy is intimately connected with storm warnings, and so I may be permitted to say a word or two as to the history of this part of our duties in the office. M. Le Verrier, in a letter of April 4, 1860, proposed that telegraphic reports from all Europe should be sent to one central station (Paris), whence warnings should be issued to the points menaced, from time to time, by the storms, and in the course of the year, he applied for permission and funds to warn the coast of France. Admiral FitzRoy, in the same year, proposed to issue his warnings, which subsequently met with such general adoption; but, while this country and France were thinking about the matter, Professor Buys Ballot, in Holland, obtained leave of his Government, and commenced to issue telegraphic intelligence to the ports of Holland in June, 1860.

There is no need at this time to go over the history of storm-warnings in this country, and the changes which were made in this system on Admiral FitzRoy's death. Suffice it to say, that we only telegraph *facts*, and that we do not actually prophecy weather or storms, though of course our endeavour is to give such intelligence as shall

enable the sailors who receive it to judge of coming weather. At the close of the lecture I shall say a few words as to the results which we are able to attain in practice.

The chart which I exhibit will show you our present system of reporting stations, with the exception of Christiansund, in Norway, and it will at once be seen from it how badly we are in want of information from the westward. While we are able to issue warnings of almost every storm which strikes the coasts of Holland and Denmark, we are frequently taken at unawares by storms on the exposed west coast of Ireland.

Various proposals have been made to surmount this difficulty: among them has been the idea of mooring ships off the coast, connected by telegraphic cables with the shore, and using them as floating observatories. The difficulty of carrying out this plan was proved by the failure of the experiment with H.M.S. *Brisk* at the entrance of the Channel. Lately, Mr. Morse, the famous telegraphist, has proposed to use buoys instead of ships, and to make them of such a size that habitable turrets could be built on them; but the idea seems hardly practicable.

The fact that the Azores lie out in the Atlantic, and that information from them would be valuable, has struck many persons, and the Portuguese Government has proposed to supply telegraphic reports from those islands as soon as they are connected by cable with the mainland. The Meteorological Committee have been requested to contribute towards the expense of this project, and they have at once consented to do so, as the daily knowledge of the state of the weather in that part of the Atlantic cannot fail to be of service to us.

As regards the chance of our receiving early intelligence in this way of advancing storms it is very slight, the Azores are too far off for us to trust implicitly unsupported reports from thence, and even if the storms did travel from them to us they would undergo such changes, *en route*, that they would be hardly recognizable. There are strong grounds for asserting that they never do so travel, for we have compared the daily reports from the Azores with those from Valencia for nearly three years and find no traceable connection between the storms which have been recorded at the two stations, and certainly no precedence, in point of time for the Azores, as regards the barometrical changes.

We ourselves, for three years, received reports free from Heart's Content through the liberality of the Anglo-American Telegraph Company, but we found them of little service, partly owing to the distance, partly to the fact that the observations were necessarily uncorroborated, and partly because the wind reports were unsatisfactory, the station being badly exposed. Accordingly, when we were requested to pay for the reports they were discontinued.

It has been repeatedly suggested that we should institute relations

with the U. S. Signal Office, in order to get intelligence of advancing storms, and in December last a paragraph was copied into all the newspapers to the effect that the great annual November wave, which was so much talked about in this country ten years ago, had been recognised in North America, as travelling across the continent, and that therefore it was probably the cause of the storms which lasted for two months with us.

These statements are all based on imperfect knowledge. There is no doubt that many of our storms do travel nearly, if not entirely, across the Atlantic, though they have not come from the mainland of America. This was proved, for the storms of February, 1870, by a very careful examination into the weather of the Atlantic when the *City of Boston* was lost. The discussion was carried out by my colleague, Captain Toynbee, and has been published by our office. According to it the storms seem to have been generated over the Gulf Stream outside the American coast and not over the continent itself, for while the wind on the eastern edge of the Gulf Stream was constantly from the southward, that on the seaboard of the Eastern States was persistently northerly.

Inasmuch as we are thrown, to a great extent, on the resources of our own system for our knowledge of the weather, it is of interest to see what principles we have to guide us. If anyone looks at the plates in our Quarterly Weather Report, containing graphical representations of the curves of barometrical pressure, and of temperature as well as of wind force, he will see that it would be very unsafe to trust to the reports of any single station for gaining a knowledge of the probable force of wind. The barometer often falls rapidly without much wind being reported, and again when the wind rises to a gale the barometer frequently has given little warning of it.

In this case, Buys Ballot's Law, which I have already explained, is invaluable. The truth of this principle is admitted, implicitly, by many older writers; but the first definite statement of it, as applied to storms in these islands, as well as the first attempt to apply a numerical measure to storms, occurs in a work* by Mr. W. H. B. Webster (surgeon, R.N.), in the following words—he is speaking of a comparison between the simultaneous readings of the barometer at Greenwich, and at Sandwich Manse, in the Orkneys:—"Whenever the barometer at Greenwich was higher than the barometer at Orkney, a southerly or south-west wind blew, the force or strength of the wind being in proportion to the difference between the two barometers." Dr. Webster then proceeds to lay down rules for the general relation of the wind to the barometer.

We do not know much of the precise relation of the wind to the barometrical *gradient*, or to the difference between the barometrical

* "Recurring Monthly Periods and Periodic System of the Atmospheric Actions." London, 1857.

readings over a given distance; but it may be stated as a general principle that if this gradient amounts to 0·1 inch per 100 miles, there will be about as much wind as an ordinary small coaster will like.

I have already explained before that Buys Ballot's Law is only a development of Reid's Law of Storms, which is that the air moves round the centre of the storm in a direction opposite to that of the hands of a watch, and that, at the centre, the barometer is lower than anywhere else; this direction of motion being reversed in the northern hemisphere.

As soon as meteorologists began to study the synoptic charts of the weather they found that the air sometimes moved in an opposite direction, *i.e.*, *with* the hands of a watch, and that when it did so, the barometer over the district round which it swept was higher than elsewhere. These are, of course, simple deductions from the rule, but they have a most important bearing on the question of whether or not we can foretell weather.

The areas of low pressure with their circulation are termed *cyclonic*, while those of high pressure with their circulations receive the name of *anti-cyclonic*. On the mutual positions and motions of these areas all our weather depends, as the force of the wind depends on the gradients, and as there would seem to be, at first sight, no reason for these gradients being steeper in cyclones than in anti-cyclones, it would appear that we ought to have as much wind near the centre of an area of high pressure, as near that of an area of depression. This idea is quite incorrect, as we find that storms are almost always connected with cyclonic areas.

Our attention is consequently chiefly directed to these cyclonic areas, so as to ascertain as quickly as possible their size and shape, with the direction in which they are advancing, and the rate of their motion. Unfortunately, we are rarely able to know much on any of these points until the storm has burst on our coasts.

The two last particulars, the direction and rate of motion of storms over these islands, depend almost entirely on the distribution of pressure which exists when the disturbance arrives, and on the distribution of pressure depends the direction in which the gradients will be steepest, and consequently the direction of the strongest wind.

The cyclonic areas move much more rapidly than the anti-cyclonic areas, which hardly change their position at all, and the former appear never to advance into the latter, but to skirt round them. Thus, when pressure is high over France, we are liable to heavy westerly gales on the southern edge of cyclonic areas crossing England. When the highest pressure lies over the North Sea, the depression passes up along the west coast of Ireland, and we have southerly gales in Ireland, as at the end of January, 1870. When the area of high pressure lies over Ireland,

we are exposed to a series of cyclonic disturbances passing down the North Sea, and bringing northerly gales to our east coast.

Not unfrequently we find the cyclonic areas slipping in between two anti-cyclones, and in this way many of our easterly storms are caused, the path of the centre of depression lying along the English channel, while the barometer is high in Scotland and in the south of France.

I have prepared a slide, exhibiting the atmospheric conditions on February 16, 1872, which will show you the co-existence of two cyclones and two anti-cyclones over the limited area covered by our reports.

On the whole, the best idea I can give you of the motion of our storms is, that they follow each other in the main current of air like eddies in a running stream, and sometimes we have more than one at a time over these islands. On Monday last we had three. The slide which I exhibit shows two: it represents the conditions of pressure on the 24th of January, 1872, when readings were so very low in London.

It would be impossible in this lecture to give you an idea of what we know of the origin and cause of storms, or of the mode in which we recognize the approach of a storm to our coasts; but it will be of interest to you to know that not very unfrequently we are visited by storms which travel so quickly that we have little hope of ever being able to issue warnings in time for them. Such was the storm of November 22, 1872, when the *Royal Adelaide* was lost, and that of February 10, 1871, of which I exhibit a diagram, will give you a fair idea of the changes which may take place within the short space of 14 hours, as apparently there were but few signs of a gale at 6 p.m. on the 9th of February, and yet at 8 a.m. next morning the storm was raging.

Lastly, we come to the actual practical results of our storm warning system. In considering this, we must make allowances for cases such as those I have just cited, as well as for the regular weekly interruption of our work on Sundays, and though last not least, for the uncertainty caused by telegraphic errors. The Signal Office of the United States claims to have been right in 77 cases out of 100 in 1872, which is a very good percentage, considering the conditions to which their service is subjected, which are in many respects far more advantageous than ours. We have been able to hoist the signals in time for the gales, in both 1870 and 1871, 46 times out of 100, and if we add to these about 20 per cent. for cases in which the hoisting of the drum was followed by strong winds, though not by a serious gale, we find in those years a total percentage of success of upwards of 60.

In the year 1872, as I am glad to say, the result is widely different. We have been in time for the gale in upwards of 60 cases out of 100, and as we have still nearly 20 per cent. for warnings justified by

strong winds, we find a total percentage of success of nearly 80, which cannot but be admitted to be highly satisfactory.

I must not be considered as taking the entire credit of this result to ourselves, most of it is due to improved telegraphic facilities, which have rendered our work more certain and easy than was formerly the case.

SAFETY-VALVE COMPETITION FOR £100.

PROVISIONAL DECISION ON THE MERITS OF THE DRAWINGS.

THE committee of three gentlemen appointed by the Editor of the *Nautical Magazine* to report on the drawings sent, twenty-six in number, have, after patient investigation and very careful consideration, submitted their reports.

The Editor gathers from the letters of the three gentlemen that they find it impossible unreservedly to accord their verdict in favour of any designs as leaving it undoubted that they—

1. Comply with the conditions,
2. Are possible of construction,
3. Are of reasonably simple design, or
4. Are workable without modification.

But two of the gentlemen add that, were they allowed to amend some palpable defects in the drawings of parts not affecting the principle of the design, one or two drawings might hesitatingly be selected.

Two members of the committee select "Virgo" as the design best entitled to the prize, though, in selecting it, they state that they are aware that it "lands them in the apparent absurdity of approving a design which is within the scope of any tyro in engineering." The third member of the committee, also with great hesitation, makes a selection for the prize. He names the three that he deems to be least open to objection and best able to be made into a Government locked-up Valve, and he selects as the first "*Mulciber*" (b), as the second "*Q. E. D.*," and as the third "*Mulciber*" (a); but he points out that the designs would have to be modified to be workable and to be altogether satisfactory.

If the members of the committee are puzzled, the *Editor* is more so; but he thinks it wise, under the circumstances, to adopt the decision of the majority of the committee, and he therefore selects "Virgo" as the design to which he is constrained to make the award of £100. This decision is now declared provisionally and on the drawings.

The conditions numbered 7, 8, 9, are as follows:—7. "Three months will be allowed from the date of the provisional decision for such of the

other competitors who have sent in drawings to challenge it." 8. "The inventor of the valve selected shall undertake, at his own expense, to provide, according to the drawings, a complete valve for trial." 9. "The final decision will be given and the award will be paid within a month of the actual trial of the valve."

The Editor, therefore, at present waits to be informed whether the selection will or will not be challenged by other competitors, and what steps those other competitors are prepared to take, by way of challenge and proof, by actual trial or otherwise.

The Editor has to thank publicly the three gentlemen who have acted so far in the matter, which is one of great delicacy, and entailing much labour and responsibility. There names, arranged in alphabetical order, are—1. HOLT, ALFRED, Esq., India Buildings, Liverpool, 2. SHARROCK, SAMUEL, Esq., Hamilton's Windsor Iron Works, Liverpool. 3. URQUHART, JAMES, Esq., C.E., R.N., 2, Royal Terrace, Westow Hill, Upper Norwood, S.E. This provisional award is dated 31st March, 1873.

ABOUT THE SAND HEADS.

THE traveller eastwards, who approaches Calcutta by sea during the lovely months of the cold season (November to February), when the smooth sea is refreshingly rippled by the cool N.E. breezes that prevail—the scene instinct with ship life; the homeward-bounders whose swelling sails are suggestive of pride in their burdens; inward-bounders (so called) working to windward, tack for tack, until seized and borne off in triumph Calcuttawards by steam tugs, perhaps the finest in the world, which are fussily smoking and paddling about in search of ships; the trim pilot brigs cruising, gay with bunting, notably one with a huge red flag at the main, a signal of her being on the watch to provide our traveller's ship with a pilot—sees the Sand Heads in their holiday garb, and will, not without difficulty, realize the fearful change wrought on that peaceful scene by influences such as those of the cyclone, which had lately swept in devastating circles over that region, and made total wrecks of the ships *Rothsay*, *Champion*, and *Omaha*, and sent other vessels into port dismasted, after being saved by a miracle from the worst peril of the deep. A few facts collected from the evidence given on oath by some of those saved from the above ships, will serve to describe the Sand Heads in more tempestuous seasons, while they contain details of suffering and death, and chronicle heroism and pluck deserving a worthier record.

"The *Rothsay*, of Glasgow, 1,400 tons, built of wood, commanded by Captain R. Mayne, fully laden, bound to Bombay, with a crew of thirty,

all told," as states the witness, John Roche, A.B., "towed to sea (the Sand Heads) from Saugor on the 29th June. We could not see the pilot brigs, we were unable to land the pilot. On Sunday, the 30th, it was blowing a cyclone up to mid-day; we lost all our sails, the mizen-topmast and topgallantmast, and the head of the mizenmast. We cleared away the wreck; about midday the weather cleared, it was nearly a calm. About 2.30 p.m. the breeze freshened, and, as the captain called it, a second cyclone came on, and the wind went all round the compass. Our bulwarks were washed away, and 27 inches were sounded in the well. We were ordered to the pumps, and were at them all night. At 10 p.m. the donkey engine, the deck-house, and the boats were all washed away; one of the men, a boatswain's mate, was ill, and in the house; he was killed when daylight came."

The 1st July.—"The captain called some of us to make a raft; we made it by about 9 a.m.; they then found themselves in four fathoms of water, and let go the anchor; the cable parted; the second anchor was let go, which swung the ship head to wind, and then orders were given to launch the raft. During the launching, a heavy sea struck the ship, which broke the captain's leg in two places, and washed the second mate, Mr. Beeny, overboard, who was drowned." John Roche goes on to say, "The ship was labouring very heavily, and the decks were washing up; we lashed the captain on the raft."

The captain's sufferings and helplessness from his broken leg, convincing him apparently that he could not reach the shore on a raft on which they were already up to their chests in water, he begged to be returned to the ship that he might end his sufferings and his life with his command, he in accordance with his wish was put back on board the ship, and the chief mate, his son, returned with him. The filial touching devotion and noble heroism of this son are well shown in the words of another witness, John Fraser, A.B. "The mate remained on board the ship, and with his own hands cut the raft adrift. He stood at the stern looking at us," (while they were drifting away). "I said to him, won't you jump, Mr. Mayne? He said, 'I cannot leave my father.' The pilot, Mr. Elson, jumped overboard and swam to the raft, and we drifted away about two miles, when we saw the ship take a heavy roll and heel over on her beam ends. We saw no more of the ship;" and down with that ship went poor Captain Mayne and his heroic son, who had cut adrift the raft with his own hands, his only chance of life, lest a weak moment might arrive, when love of life might weaken his noble sense of duty and love for his father. Then followed two dreadful days and nights on the raft, during which exposure, starvation, and drinking sea water did their direful work. On Tuesday night, the 2nd July, at the suggestion of Mr. Elson the pilot, they divided the raft into two, a large and a smaller one,

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other competitors who have sent in drawings to challenge it." 8. "The inventor of the valve selected shall undertake, at his own expense, to provide, according to the drawings, a complete valve for trial." 9. "The final decision will be given and the award will be paid within a month of the actual trial of the valve."

The Editor, therefore, at present waits to be informed whether the selection will or will not be challenged by other competitors, and what steps those other competitors are prepared to take, by way of challenge and proof, by actual trial or otherwise.

The Editor has to thank publicly the three gentlemen who have acted so far in the matter, which is one of great delicacy, and entailing much labour and responsibility. There names, arranged in alphabetical order, are—1. HOLT, ALFRED, Esq., India Buildings, Liverpool, 2. SHARROCK, SAMUEL, Esq., Hamilton's Windsor Iron Works, Liverpool. 3. URQUHART, JAMES, Esq., C.E., R.N., 2, Royal Terrace, Westow Hill, Upper Norwood, S.E. This provisional award is dated 31st March, 1873.

ABOUT THE SAND HEADS.

THE traveller eastwards, who approaches Calcutta by sea during the lovely months of the cold season (November to February), when the smooth sea is refreshingly rippled by the cool N.E. breezes that prevail—the scene instinct with ship life; the homeward-bounders whose swelling sails are suggestive of pride in their burdens; inward-bounders (so called) working to windward, tack for tack, until seized and borne off in triumph Calcuttawards by steam tugs, perhaps the finest in the world, which are fussily smoking and paddling about in search of ships; the trim pilot brigs cruising, gay with bunting, notably one with a huge red flag at the main, a signal of her being on the watch to provide our traveller's ship with a pilot—sees the Sand Heads in their holiday garb, and will, not without difficulty, realize the fearful change wrought on that peaceful scene by influences such as those of the cyclone, which had lately swept in devastating circles over that region, and made total wrecks of the ships *Rothsay*, *Champion*, and *Omaha*, and sent other vessels into port dismasted, after being saved by a miracle from the worst peril of the deep. A few facts collected from the evidence given on oath by some of those saved from the above ships, will serve to describe the Sand Heads in more tempestuous seasons, while they contain details of suffering and death, and chronicle heroism and pluck deserving a worthier record.

"The *Rothsay*, of Glasgow, 1,400 tons, built of wood, commanded by Captain R. Mayne, fully laden, bound to Bombay, with a crew of thirty,

all told," as states the witness, John Roche, A.B., "towed to sea (the Sand Heads) from Saugor on the 29th June. We could not see the pilot brigs, we were unable to land the pilot. On Sunday, the 30th, it was blowing a cyclone up to mid-day; we lost all our sails, the mizen-topmast and topgallantmast, and the head of the mizenmast. We cleared away the wreck; about midday the weather cleared, it was nearly a calm. About 2.30 p.m. the breeze freshened, and, as the captain called it, a second cyclone came on, and the wind went all round the compass. Our bulwarks were washed away, and 27 inches were sounded in the well. We were ordered to the pumps, and were at them all night. At 10 p.m. the donkey engine, the deck-house, and the boats were all washed away; one of the men, a boatswain's mate, was ill, and in the house; he was killed when daylight came."

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went drifting on through that terrible night, seven feet of water in the hold, and human skill powerless to aid them, nearer and nearer to the unknown, until at 6 a.m., on the 1st July, she struck and began to fill. At 8 a.m., happily for them, the weather moderated a little. The water in the ship was up to the hatches. They got the boats out (two), and, under the command of the captain and chief officer, all hands left the ship in them. The boats almost immediately were capsized, and floated bottom up with the crews upon them. By a wonderful effort of pluck and determination, they succeeded in turning one of them right side up, and then by lashing two oar's, blades rigged outwards, as if feathered, prevented her being capsized again, and in this wise were drifted on to Saugor Island, seven of their number having perished by the way. The seventeen survivors were kindly treated and fed, and found a haven of rest in Saugor lighthouse, until an opportunity offered of sending them the eighty miles river journey thence to Calcutta.

Here ends our sad narrative, and if it falls very short in descriptive power, it must be borne in mind it is a narrative of facts told principally in the simple, truthful language of the actors in the scenes they describe; and no writer of fiction could conceive grander self-sacrifice than that of Mr. Mayne, the chief mate of the *Rothsay*, or greater gallantry and heroism than Mr. Elson's. Much sympathy and admiration of the latter's conduct has been expressed in the public journals, and a handsome subscription has been got up for his widow.

Those persons who believe that inspection and load lines and other grandmotherly interference will "reduce the loss of life at sea by three-fourths," must surely have forgotten altogether such cases as the above, and must have a very poor conception of the nature and causes of most of the serious losses of life at sea. In what way can inspection of a ship in port reduce loss of life in such cases as these?

GREAT GRIMSBY FISHERMEN.—A list of smacks sailing out of the port of Grimsby has just been published. Their number is now 487, and of these 117 are codmen manned with ten hands, and 370 trawlers, manned with five hands. This gives a floating population of 3,020 fishermen. We have heard that the Lords' Commissioners of the Admiralty may possibly erect convenient and commodious drill-sheds at Grimsby, so as to give these men an opportunity of joining the Reserve. If so, and the men enrol, a sum of at least £5,000 will be paid annually there for retainers. This will be a great boon to the inhabitants.

THE RIVER.

By Percy Hamilton.

Morning paints the hills with blushes
As the vapours upward fly,
Through the vale a river rushes,
Stealing roses from the sky;
When the bank is white with daisies
Trips a little maid along,
Smiling on the stream she gazes
And breaks out in joyous song:
"Merry river, laughing river!
You and I were made for play:
We will both dance on for ever,
Laughing river, dance away!"

Now the summer sun has mounted
To his noontide resting place;
And the smiles cannot be counted
On the river's beaming face.
In the glorious midday splendour
Lies a youth beside the stream,
And with eyes and voice love-tender,
Sweetly sings he half a-dream:
"River, we, in mystic fashion,
Both are filled with heaven above;
River, strong as human passion;
River, deep as early love!"

Evening shadows now are darkling
Over hill and over dale;
And the river, not so sparkling,
Hurries onward, cold and pale.
By the stream an old man wanders,
Wanders weary, weak, alone,
On his staff he leans and ponders,
Murmuring in a monotone:
"River, strange, mysterious river,
Whence art thy cold waters flowing?
On thy brink I stand and shiver,
Tell me, whither art thou going?"

A RECENT BOILER EXPLOSION, AND THE LESSON IT TEACHES.

THE engines were of the ordinary description, inverted cylinder direct acting. There was one boiler for the propelling engines and one for the donkey engine. According to the evidence given by the engineer, the steamer was run so hard that there was not time at ports to examine the boiler properly or to complete necessary repairs. In December, 1871, the steamer was in port in a damaged state, having been on the rocks, and had to undergo considerable repairs. At the same time the bottoms of the furnaces were to be stayed, as they were showing unmistakable signs of weakness. Two stays only were put in one of the furnaces, and three in another, all near the front of the furnace, more would have been put in, but the workmen were drinking and went on strike before completing the repair. For the whole of the following year the steamer continued to make successive short voyages, but time was never taken to complete the staying of the furnace bottoms. About the middle of last year two of the stays that had been put in having been leaking badly, they were covered over by bonnet patches, but the stays omitted at the former repair were never added. The furnace bottoms, originally concave on the top surface, had years before become convex on the top, and it was on this account the stays were required. The furnace sides had become thin at several of the side water-space stays, and some of them had been repaired by round rivetted patches. At one of those stays the furnace plate had worn to a hole close to the stay, this hole had been filled up with a rivet, leaving the thin plate insufficient for the stay, and another hole had been formed at the lower side of the stay and only rust kept that tight. The boiler was understood by the engineer to require watching, and although the safety-valve was still loaded to 21lb. per square inch, the pressure to which the boiler had been loaded when new, the engineer took care that the pressure should never exceed 15lbs. per square inch. The pressure, even with great watchfulness, might often exceed this with steam up and the engines at rest, and at different times they had little "burst outs" when so situated. At one time it was a hole that had burst out on the starboard bottom plate, the plate had worn to be very thin, and at this place a hole about $\frac{1}{8}$in. diameter had burst out when lying in harbour under steam. Before starting on the last voyage, they had another "burst out" at the blow-off cock. The steamer went to Antwerp, and then left Antwerp for Middlesbro' in ballast. In Antwerp river they had another "burst out," a hole in the port bottom plate, similar to the one described above, as having occurred before on the starboard side. The vessel had to anchor in the river to get this

repaired; this took the greater part of that day, and they then proceeded on their voyage. On the evening of the next day they had the final "burst out," this time the bottom of the port furnace burst up the plate, rending about four feet across, and opening a hole about four square feet area. The engineer who was then in the engine-room (the back of the boiler is the engine-room) heard a "hiss, hiss," and a rush, but no "explosion," and found himself enveloped in steam. He at once lay down on the floor, at the end of a chest, and covered his head as well as he could with his jacket. When the steam cleared away he found the engine had stopped, and he then proceeded along the passage to the stokehole. At the stokehole end of the passage he found one of the firemen who had left the engine-room just before the explosion. This man was the only one in the stokehole at the time, and he was the first who died. Six others were seriously injured, and one of these also has since died. These were on deck under the bridge, or in their berths, on deck under the bridge. The engineer escaped with only an irritated throat, through breathing steam. The vessel was off shore when this occurred, and they signalled for assistance and sent the injured men ashore in charge of the mate in a lifeboat that came off to them. The men had been parboiled by the steam, and were then exposed to a lifeboat passage of several miles in a bitter cold night in rough weather, but they were wrapped up as well as the means available would allow. An inquest was held, and the verdict was, that the owners were to be blamed for their great negligence in not having thoroughly repaired the boiler before the steamer left on her last voyage. An official enquiry followed. The steamer had never been carrying passengers, and had therefore never been under Board of Trade survey. The engineer was not a bred mechanic, only a driver, and had a second-class certificate of service; that document, as our readers well know, says nothing whatever about his competency. The certificate was produced in court; it bore the man's signature in an excellent style of penmanship, but he declared on oath he could not write and could not even read writing, and was unable to sign his evidence. He said he now believed the furnace that had exploded had been working in an unsafe state, that the furnace No. 2 had also been unsafe, that furnace No. 3 had been unsafe, that furnace No. 4 had been unsafe, that the main stays had been unsafe, that the crown of the boiler had been unsafe, and that the steam-chest had been unsafe. The pieces of the boiler produced in court fully established this remarkable evidence, pieces were on the table varying from one-eighth to writing paper thickness, and some of the pieces showed that there must have been in the steam chest, and in the crown at some places quite a hole except for the rust. One of the witnesses at the inquest stated that his atten-

tion was attracted to this by seeing through a hole in the crown the light taken into the boiler by one of the inspectors. The rust had dropped off that place and left a hole. The description of the boiler given by the witnesses was such that the barrister acting for the owners stated that the value of the evidence would be much reduced by the evident exaggeration of the facts, for if they were true the inquiry should not be into the cause of the explosion, but into the cause of the boilers carrying any pressure at all. Two experts were asked in reference to this remark, whether they considered the evidence they had heard to have been exaggerated, they replied that they had carefully examined the boiler and could corroborate to its full extent all the evidence that had been given as to the unsafe state of the boiler, one said it was not safe at any pressure, and the holes referred to had been steamtight only because there was oxide of iron over them, the jarring of the stays in cutting out the pieces, had shaken the rust off these parts and left the holes. An engineer who appeared for the owners stated that he would have been very sorry to have been near that boiler with even three pounds pressure on it.

A considerable part of the time of the inquest was occupied with the question who was the superintendent over the boiler. When the question was put on board the steamer, "who was the superintendent engineer?" both the master and the mate answered that it was a gentleman they named, but when that gentleman was examined he said he was not the superintendent engineer he was only a managing clerk. He however admitted that he received the reports of the engineer, that he looked to the state of the boiler in considering these reports, and that he used in his inspections to go inside the boiler. He was asked whether in going inside the boiler he was acting in the capacity of a managing clerk, and what more he would have required to have done to have made him the superintending engineer. He replied that the difference between him and a superintendent was he wanted the practical experience, and the jury seemed to think his answer to be quite to the point.

The donkey boiler was also in a bad state and the Board of Trade Inspector to prevent the possibility of steam being raised in it while they were on board, put a hammer through the side and through the crown, the place at the side was a local defect only a full sixteenth thick, and the crown at the place tested was a full eighth of an inch thick. Steam had been in this boiler when the Board of Trade inspectors were first on board, the safety valve was loaded by a Salter's balance to 30 pound per square inch and there was no lock up valve on it, and not even a stop ferule to prevent the nut being screwed down to any higher pressure.

The verdict of the coroner's jury is that "They found that the deaths were caused by the explosion of the boiler of the steamer, and that the

owners were guilty of great negligence in sending a vessel to sea with a boil er in such condition as it had been proved to be. They further desired to represent to the Board of Trade that it is very desirable that *all steam vessels should be inspected by that Board.*"

The decision arrived at, at the official enquiry is,

"The court is therefore of opinion that the owners of the steamer have neglected their duty in not seeing that the boiler was efficiently repaired before this voyage, and are, therefore, responsible for this disaster.

"Taking into consideration all the circumstances of this case the court is unanimously of opinion that this disaster was the result of very culpable neglect on the part of the owners in not having the boiler examined by a fit and competent person, and properly repaired prior to her last voyage."

The result of recent boiler explosion inquests has been generally a recommendation that "all boilers should be subjected to periodical Government inspection," as is the case with passenger steamers now. What is the cause of these explosions? Have individual explosions been at all influenced by the fact that all other boilers were not under inspection. Is it not rather that boilers which have burst have been neglected, and that the owners of such boilers are the only parties who should be blamed. When a case of theft or of murder is proven, do juries recommend that every citizen shall thereafter be subjected to periodical examinations, as to the state of his moral character, by chaplains appointed by Government, who are to issue certificates accordingly? Do they not rather bring home the crime to the person accused, and by punishing him teach all a lesson? By far the greater number of steam users on land and afloat do all that is reasonable for the safety of their boilers, and for the protection of life risked in their service. Is it proper that this majority should be punished by the inconvenience and expense of forced inspections, which they do not require, merely because there are some explosions. If owners choose to patch boilers in instalments, and so as not to stop their work or their steamer, they do it with their eyes open, and cannot afterwards complain if they are found fault with. It seems to us that the law is quite sufficient as it is. Is not the owner of a boiler who does not make it his business to have his boilers properly inspected and repaired, in the event of death being caused by an explosion, guilty of manslaughter if the non-repair was through neglect: and guilty of murder if the dangerous state of the boiler was known to him? If juries would look at these occurrences in this light they would do far more good than could be accomplished by any system of Government inspection. The majority, we have said, do what is

supplies. Of course the staples of the district find their outlet to the port by more modern means now.

The first step to advance the fortunes of Cardiff was taken in 1791, when the Glamorgan canal was commenced. This engineering triumph —as it certainly then was—was opened for traffic in 1798. It connected the two most important towns in Glamorgan, Merthyr and Cardiff, distant about 24 miles. The former is situated at an altitude of some 600 feet above the other. At certain spots in its route the canal rises in terraces of water, with frequent "locks," so as to elevate the barges as they proceed to their more elevated destination. The float and basin (which latter has been constructed recently) is about a mile long, and vessels of about 200 tons burthen can be admitted. For forty-one years it formed the principal harbour or dock communication of the port, and for forty-three years it was the great means of transit from and to the colliery and iron producing districts. The next push upwards was made by the late Marquis of Bute. He succeeded to his Glamorgan estates in 1814, and in 1831 he applied for Parliamentary powers to construct a dock or ship canal. This power was granted, and, on the 9th October, 1839, the dock was formally opened. It is now known by the name of the "West Bute Dock." Since that period the exports have advanced with rapid and constant stride. In 1841 the "Taff Vale Railway" was opened for traffic. This was necessary to develope the dock. It was projected by a company, and now connects the town with the Taff, Dare, and Rhondda valleys, wherein are situated the principal collieries and ironworks of the county. It was a rival to the canal, but did not supersede it altogether. Subsequently, the "South Wales Railway," now part of the "Great Western" system, was formed, connecting Cardiff with London, &c., on the east, and Swansea, &c., on the west. The commerce of the place grew at such a rate, that it was found necessary to start another and larger dock, which was finally completed in 1859. In connection with it, another railway, called the "Rhymney," has been constructed. It connects the port with the town of Rhymney, about twenty-six miles inland, and its extensive ironworks. This line has of late been connected with the north-western system, giving direct communication with the great manufacturing centres of the north. To supplement these great feeders of trade, other schemes, projects and enterprises are developing. A direct communication has been opened with the Ogmore and Ely Valley Railways, by means of the change on the Great Western to the narrow from the broad gauge. Another new dock, called the Penarth Dock, was opened in 1865. It was promoted by a company, and has since been leased to the Taff Vale Railway Company. It has been the means of meeting the increased demand for coal, and the great dispatch required for steamers.

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A few figures will, however, best illustrate the progress of the place. The population in the following years—

1801	amounted to	...	...	...	1,870	persons.
1811	,,	...	...	...	2,457	,,
1821	,,	...	...	...	3,521	,,
1831	,,	...	...	...	6,187	,,
1841	,,	...	...	...	10,077	,,
1851	,,	..	...	...	18,351	,,
1861	,,	...	...	...	32,954	,,
1871	,,	...	...	...	39,675	,,

But these numbers do not adequately show the rate of increase in the later years. They are merely given for the municipal limits, and which, formerly, were quite large enough to contain all the citizens. These limits have long overflowed with the tide of increase, and new hamlets have sprung up to form important suburbs. It is, therefore, only right to give the figures for the registration district, which more properly display the population immediately interested in the port, and who may be said to be citizens of Cardiff, as the Parliamentary Boundary Act nearly encircles them all. The numbers are:—

For	1861	58,235 persons.
,,	1871	76,230 ,,

The Parliamentary borough contained:—

In	1871	58,059 persons.

The number and tonnage of vessels registered at the port were:—

In	1840	64	vessels	6,057 tons.
,,	1850	68	,,	6,522 ,,
,,	1860	93	,,	14,606 ,,
,,	1870	138	,,	26,029 ,,
,,	1871	136	,,	28,362 ,,

The foreign and colonial trade, inwards, with cargoes, showed:—

In	1831	8	vessels	— tons.
,,	1841	18	,,	4,474 ,,
,,	1851	246	,,	26,010 ,,
,,	1861	202	,,	44,627 ,,
,,	1871	1,098	,,	236,968 ,,
,,	1872	1,874	,,	365,842 ,,

The same trade, outwards, displayed:—

In	1831	144	,,	— tons.
,,	1841	249	,,	28,845 ,,
,,	1851	1,387	,,	260,916 ,,
,,	1861	3,603	,,	879,778 ,,
,,	1871	4,193	,,	1,619,702 ,,
,,	1872	4,771	,,	1,926,233 ,,

The coasting trade, inwards, amounted to:—

In	1831	778	vessels	— tons.
,,	1841	1,047	,,	48,783 ,,
,,	1851	1,595	,,	100,103 ,,
,,	1861	2,562	,,	207,388 ,,
,,	1871	2,678	,,	239,313 ,,
,,	1872	2,730	,,	235,906 ,,

The same trade, outwards, was:—

In	1831	1,799	vessels	— tons.
,,	1841	2,732	,,	175,936 ,,
,,	1851	6,490	,,	449,753 ,,
,,	1861	7,933	,,	675,355 ,,
,,	1871	6,919	,,	588,011 ,,
,,	1872	6,994	,,	600,805 ,,

The amount of the coal exported, foreign, was :—

In	1840	3,312	tons.
,,	1850	213,697	,,
,,	1860	1,142,366	,,
,,	1870	2,357,182	,,
,,	1872	2,603,260	,,

The quantity sent, coastwise, of the same article, reached :—

In	1840	162,568	tons.
,,	1850	497,695	,,
,,	1860	850,000	,,
,,	1870	854,791	,,
,,	1872	933,328	,,

The exports of iron showed :—

In	1856	131,824	tons.
,,	1860	169,547	,,
,,	1870	268,110	,,
,,	1872	251,988	,,

The number of sailors and others forming crews of British vessels, shipped and discharged on foreign-going voyages, were :—

In	1854	4,534	persons.
,,	1860	7,518	,,
,,	1866	16,279	,,
,,	1872	23,810	,,

The dock accommodation and other particulars regarding them may be summarised thus :—

Year Opened.	Name.	Width of Entrance.		Water Area.		Lineal Quayage.	
		Ft.	In.	Ac.	Yds.	Miles.	Yds.
1798	Glamorgan Canal Float ...	27	0	13 (estimated)		2	88
	do. Basin ...	29	6	1	2165	0	323
1839	West Bute Dock ...	36	0	18	1768	1	906
	do. Basin ...	45	0	1	1827	0	200
1859	East Bute Dock ...	47	0	47	520	1	1106
	do. Basin ...	55	0	2	875	0	253
1865	Penarth Dock ...	60	0	17	4053	0	1400
	do. Basin ...	60	0	3	148	0	266
Not yet opened	New Dock Basin ...	80	0	11	2315	0	666
	Total			115	3998	6	1688

right, and at present feel the whole weight of the responsibility upon themselves, but if Government inspectors were appointed these owners would not think it necessary to be so scrupulously careful as they had been when there was no Government inspection, and the improvement upon the minority would, we believe, be more than balanced by the deterioration in the majority. Rather bring home the responsibility to the offending minority, by making the owner criminally responsible who allows a boiler to become unsafe, instead of, as required by Mr. Fortescue's Act, keeping it safe.

OUR GREAT PORTS.

CARDIFF.

THE town of Cardiff, with its ancient castle, can boast of as old a record as most English or Welsh places. The port is not, however, of such antique date, and it is only of late years that the spot has become widely known. Taken in conjunction with the city of Llandaff, which is now being practically incorporated with it, owing to the extension of building and the increase of population, an older ecclesiastical history can be claimed for it than for any other diocese in the kingdom.

The site of Cardiff is said to have been occupied by the British, by the Romans, and by the Normans. From its situation on the banks of the river Taff it derives its name, Caer-daff, or the fortress on the Taff. Similarly, Llandaff takes its name from the church on the Taff, Llan being the Welsh appellation for church. The See of Llandaff is stated by the *Cambro-Briton* to have been founded so far back as the year 167. It is also recorded in one of the old Welsh Triads that the first archbishopric in the land was "Llandav" (Llandaff); the second, Caer-Evrawg (York); and the third, Llundain (London). Be this as it may, the first bishop, Dubritius, flourished at the close of the fifth century. The second bishop, Teilo, ruled at the beginning of the sixth century. Numerous churches are named after him; and his effigy on his tomb is still pointed out at the cathedral to this day. Tradition asserts that the place was of considerable extent at one time, and held a major position compared to that of Cardiff.

Of the general history of the place and its neighbourhood, much need not be said, although there are many interesting details extant of a warlike and energetic people residing there for centuries. The settlement of

the Normans at the castle, in the beginning of the twelfth century, was occasioned by a feud between Jestyn-ap-Gwrgan, Prince of Glamorgan, and a neighbouring Welsh chieftain. Robert Fitzhamon, the Norman knight, who came to assist Jestyn, at his invitation, ultimately acquired the castle at Cardiff, and several of his followers spread and settled on the adjacent lands.

Baldwin, Archbishop of Canterbury, in 1187, preached the third crusade at Llandaff, an account of which is given by Giraldus Cambrensis, in his "Itinerary through Wales." He records, that the English and Welsh residents were divided, the one on the one side and the other on the other, to hear the archbishop preach.

Henry II., on his return from Ireland, stayed at Cardiff, and, it is said, had a curious adventure with a person of strange appearance, who addressed him in the German tongue, in warning language, as he went to church. It was Cardiff where the unfortunate Robert Duke of Normandy was confined by his ruthless brothers for twenty-eight years, till his death took place, and where it is said he had his eyes put out. In the year 1648, Cromwell, in person, bombarded the castle, and took it; and one of the bloodiest battles ever fought by his forces took place at St. Fagans, a village about five miles distant. But the most interesting incident, at least in a commercial point of view, was the advent of the Bute family there. It was not, however, till the succession of the second marquis (father to the present noble lord) that the steps were instituted which have led to its rise as a port.

As a corporate community, the place is of ancient date. The first charter granted to it is dated 12th Edward III., A.D. 1328; but the governing charters are those of 42nd Elizabeth and 6th James I., *temp.* 1600 and 1608, respectively. By the Municipal Reform Act, the corporation consists of six aldermen, and eighteen councillors. The town was then divided into two wards, but, by a local Act of Parliament, passed in the session of 1871, another ward has been added.

On the Boundary Commission, under the Reform Act of 1869, being issued, the Parliamentary boundary was very much extended, and now it no longer runs conterminous with that of the municipality. The borough is represented in Parliament by one member.

Trade appears to have been but little valued by the inhabitants of the district previous to the present century. Cardiff was then only a "creek" of the port of Bristol, and a few small vessels traded there and discharged and loaded in the estuary of the Taff. The coal and iron, which were even then brought from the "hills" and "valleys" to the north of the town, were conveyed on the backs of mules. To this day a drove of these useful animals may be seen coming from the hilly region of Pentyrch—about six miles inland—and going back again laden with

supplies. Of course the staples of the district find their outlet to the port by more modern means now.

The first step to advance the fortunes of Cardiff was taken in 1791, when the Glamorgan canal was commenced. This engineering triumph —as it certainly then was—was opened for traffic in 1798. It connected the two most important towns in Glamorgan, Merthyr and Cardiff, distant about 24 miles. The former is situated at an altitude of some 600 feet above the other. At certain spots in its route the canal rises in terraces of water, with frequent "locks," so as to elevate the barges as they proceed to their more elevated destination. The float and basin (which latter has been constructed recently) is about a mile long, and vessels of about 200 tons burthen can be admitted. For forty-one years it formed the principal harbour or dock communication of the port, and for forty-three years it was the great means of transit from and to the colliery and iron producing districts. The next push upwards was made by the late Marquis of Bute. He succeeded to his Glamorgan estates in 1814, and in 1831 he applied for Parliamentary powers to construct a dock or ship canal. This power was granted, and, on the 9th October, 1839, the dock was formally opened. It is now known by the name of the "West Bute Dock." Since that period the exports have advanced with rapid and constant stride. In 1841 the "Taff Vale Railway" was opened for traffic. This was necessary to develope the dock. It was projected by a company, and now connects the town with the Taff, Dare, and Rhondda valleys, wherein are situated the principal collieries and ironworks of the county. It was a rival to the canal, but did not supersede it altogether. Subsequently, the "South Wales Railway," now part of the "Great Western" system, was formed, connecting Cardiff with London, &c., on the east, and Swansea, &c., on the west. The commerce of the place grew at such a rate, that it was found necessary to start another and larger dock, which was finally completed in 1859. In connection with it, another railway, called the "Rhymney," has been constructed. It connects the port with the town of Rhymney, about twenty-six miles inland, and its extensive ironworks. This line has of late been connected with the north-western system, giving direct communication with the great manufacturing centres of the north. To supplement these great feeders of trade, other schemes, projects and enterprises are developing. A direct communication has been opened with the Ogmore and Ely Valley Railways, by means of the change on the Great Western to the narrow from the broad gauge. Another new dock, called the Penarth Dock, was opened in 1865. It was promoted by a company, and has since been leased to the Taff Vale Railway Company. It has been the means of meeting the increased demand for coal, and the great dispatch required for steamers.

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A few figures will, however, best illustrate the progress of the place. The population in the following years—

1801	amounted to	...	...	...	1,870	persons.
1811	,,	...	...	...	2,457	,,
1821	,,	...	...	...	3,521	,,
1831	,,	...	...	...	6,187	,,
1841	,,	...	...	...	10,077	,,
1851	,,	..	...	...	18,351	,,
1861	,,	...	...	...	32,954	,,
1871	,,	...	...	...	39,675	,,

But these numbers do not adequately show the rate of increase in the later years. They are merely given for the municipal limits, and which, formerly, were quite large enough to contain all the citizens. These limits have long overflowed with the tide of increase, and new hamlets have sprung up to form important suburbs. It is, therefore, only right to give the figures for the registration district, which more properly display the population immediately interested in the port, and who may be said to be citizens of Cardiff, as the Parliamentary Boundary Act nearly encircles them all. The numbers are:—

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The Parliamentary borough contained :—

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In 1840	... 64 vessels	...	6,057 tons.
,, 1850	... 68 ,,	...	6,522 ,,
,, 1860	... 93 ,,	...	14,606 ,,
,, 1870	... 138 ,,	...	26,029 ,,
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The foreign and colonial trade, inwards, with cargoes, showed :—

In 1831	... 8 vessels	...	— tons.
,, 1841	... 18 ,,	...	4,474 ,,
,, 1851	... 246 ,,	...	26,010 ,,
,, 1861	... 202 ,,	...	44,627 ,,
,, 1871	... 1,098 ,,	...	236,968 ,,
,, 1872	... 1,874 ,,	...	365,842 ,,

The same trade, outwards, displayed :—

In 1831	... 144 ,,	...	— tons.
,, 1841	... 249 ,,	...	28,845 ,,
,, 1851	... 1,887 ,,	...	260,916 ,,
,, 1861	... 3,603 ,,	...	879,778 ,,
,, 1871	... 4,193 ,,	...	1,619,702 ,,
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The coasting trade, inwards, amounted to :—

In 1831	... 773 vessels	...	— tons.
,, 1841	... 1,047 ,,	...	48,783 ,,
,, 1851	... 1,595 ,,	...	100,103 ,,
,, 1861	... 2,562 ,,	...	207,388 ,,
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,,	1860	...	...	..	...	1,142,366 ,,
,,	1870	...	...	...	...	2,357,182 ,,
,,	1872	...	...	...	...	2,608,260 ,,

The quantity sent, coastwise, of the same article, reached :—

In	1840	...	...	...	...	162,568 tons.
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,,	1872	...	...	...	...	933,328 ,,

The exports of iron showed :—

In	1856	...	...	...	...	131,824 tons.
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,,	1870	...	...	...	...	268,110 ,,
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,,	1872	...	...	...	...	23,810 ,,

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	do. Basin ...	29	6	1	2165	0	323
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	do. Basin ...	60	0	3	148	0	266
Not yet opened	New Dock Basin ...	80	0	11	2315	0	666
	Total			115	3998	6	1688

The construction of these works have cost between two and three millions sterling. There are also three extensive graving docks, and other two projected.

The greatest depth of water at these docks is at the new basin, now nearly complete. It will reach 35 feet 8½ inches. The West Bute Dock has 28 feet 8½ inches. The East Bute Dock has 31 feet 8½ inches; all at spring tides. The facilities for shipping coal at the various docks are great. There are thirty-three staiths in the existing Bute Docks alone, and many of them are fitted with the latest improvements in hydraulic machinery. To encourage an import trade, the noble proprietor has caused some large warehouses to be erected. Already the signs of another phase in the trade are apparent, and, probably, in a few years a large inward business will be *un fait accompli*. The line of steamers to America is an augury, but there are many others. Several new commercial houses have arrived and become located. New works are being opened; prominent amongst which is the "Tharsis" Copper Works, shortly to be opened, and will employ hundreds of people.

The establishment of various institutions in the interests of commerce and especially Maritime Commerce, deserves a passing notice. The Chamber of Commerce is one. Since its formation seven years ago it has been the means of much good to the town. A Seamen's Hospital has been established on board of the *Hamadryad*, an old man-o'-war. It is professedly supported by voluntary contributions, but it is quite the custom, seldom infringed, for all ships arriving or departing from the port to pay a charge of two shillings per 100 tons. There are other two "superannuated" old hulks, the *Havannah* and the *Thisbe*, the former used as a ragged school, and the latter as a mission ship. There is a large Sailor's home erected by the Bute Trustees, and any deficiency of annual income is nobly defrayed by them. Considering the size of the port, great energy seems to have been displayed of late years in catering to the necessities of the 4,000 and odd sailors, who are always there to form a resident "floating population."

Up to the year 1866, Cardiff was notorious in the maritime world for the extent to which "crimping" was carried on there. At that time meetings were addressed by its public men thereon, and the newspapers were full of reports and articles about it. The Chamber of Commerce solicited the Board of Trade to interfere. An inspector was sent down to inquire; and the result was the appointment of a small police force at the Mercantile Marine Office. The consequence has been the almost entire suppression of that nautical disease, so to speak, which only now breaks out fitfully, as it were. Like all rapidly rising places, Cardiff at one time became the resort of many desperate characters; but, under the energetic action of the stipendiary and other magistrates, the Watch Com-

mittee and the police, the town has long been reduced to a normal state of quietude and peaceableness. The police are in three divisions; first, for the town; second, for the docks; and third, for the shipping offices. Each acting in their several spheres, effectually work out a system of order.

The appearance of the town has, of late years, changed greatly for the better; a handsome tower has been added to the castle, which may be said to form part of the upper part of the town. An extensive hotel has been erected on the "limited liability" principle. Tramways have been laid down; several fine churches have been built. Old streets were removed to make way for good thoroughfares. It is now proposed by the Great Western Railway Company to erect an extensive central station, into which all the local lines can run. This will be an ornament to the town, and of vast vitality to business.

In concluding this article, it may be observed that the situation of this port, taken in conjunction with the vast outlay of capital in constructing docks, evidently point to a great future for it. The American continent is just as available to the import of its commercial enterprise as to that of Liverpool, or to the ready communication of its steamers as that of Southampton. Europe, India, Africa, &c., are equally accessible to her ships as to those of any other British ports. The immense means at her disposal for an export trade give a great advantage. New beds of steam-coal are still being explored and opened up. There was a calamitous "strike" in 1871, which for four months seemed to paralyze the coal trade; but since then it appears to have expanded with increased energy. In the present year, too, a more extensive "strike" has taken place in the iron trade. It threw about 60,000 men out of employment. But the probability is, that the result will be a better measure of the strength of the contending parties by each other. A steadier style of working will ensue on the part of the men, and a more sure sense of stability will be felt by the masters.

The study of the modern history of this place proves that it has been raised to its present eminence as the fourth port in the United Kingdom, for the quantity of its exports and the extent of its shipping, principally, by the capacity of one man. Of course, the natural capabilities of the neighbourhood—such as the rich deposits of steam coal and iron ore—are incomparable in their way. But, after all, without the docks and the ships, these sources of wealth could not have been developed, and turned into value.

The next port to notice, of the chosen series, will be that of Sunderland.

ERRATA (Liverpool.)—At page 122, line 32, of the February number, the following omission should be added. After the word "Birkenhead"

add the words "and Liverpool."—March number (Newcastle): At page 189, lines 11, 12, and 13, for the proper names, Elden, Hersley, Avisaï, and Mouism, read Eldon, Horsley, Avison, and Morrison.

ON THE CONVERGING OF THE WIND IN CYCLONES.

By Captain Douglas Wales, Harbour Master, Mauritius.*

Some remarks respecting the uncertainty of the real position of the centre of a cyclone set me thinking, and I send you a few ideas on the subject, which, as a sailor, I think worthy the serious attention of seamen, and the correctness of which they may put to the test of experience whenever they have opportunities of doing so. Allow me to premise that I have no intention of dogmatizing. I believe our knowledge of the causes of these fearful tempests, of their origin, their progress in this or that direction, their rate of progression, their recurving, the reasons of those recurvings, and their ultimate dispersion, to be still in its infancy. No doubt the knowledge already acquired has saved many a good ship from becoming entangled in these storms, especially ships approaching them on their equatorial sides; but at the same time it must be admitted that more than one intelligent seaman, who thought himself well up in the subject, has actually run into the very centre of a cyclone, when, by all known rules, he ought to have been certain of avoiding it. There must be some reason for such an error, and it is that reason that I have been seeking for, and which, I trust, I have to some extent discovered. I assume that within a diameter of 40, 50, 60, 70, or 80 miles a true circular storm of terrific violence must be found in every so-called hurricane, and that to a considerable distance outside and around this central and circular storm, winds are to be found gradually decreasing in force from 11, near the outer edge of the central storm, to 7 and 6, at the outer edge of the bad weather, but which, instead of blowing in ever-enlarging circles, further and further out from one common centre, are always converging to that centre, and on all sides gradually increasing until, at a certain distance from the central calm, they acquire the force of a hurricane (12) and thence inwards blow with great violence in what, in all probability, is as nearly as may be a circle. It is these converging lines of wind that are, I think, likely to lead men into error as to the position of the centre of the storm. In the remarks I make I shall, to prevent confusion, confine myself to cyclones south of the equator, every

* The substance of this paper was communicated to the Meteorological Society at the Mauritius.

one acquainted with the cyclonic theory knowing that the inverse of rules for the guidance of seamen in the southern hemisphere will be the rules for their guidance in the northern hemisphere. Let us suppose that a ship bound to Europe arrives at a certain point, the wind being N.E. with force 7—that is, double reefs and jib—barometer falling, sky overcast, confused swell, and, in short, every appearance of bad weather—lat. 12° S., long. 70° E. What ought her commander to do? "Heave to on the port tack," says one, "and wait for the weather to clear." "Run to the S.W.," says another, "and make use of the storm." Being a pushing fellow he makes up his mind to run, and, truth to say, there are as many reasons for approving that proceeding as for finding fault with it. If he succeeds in making use of the hurricane he is considered a smart fellow; if he runs into it, and is dismasted, or worse, "rash," "headstrong," "ignorant," &c., are the best terms he can look for; and yet he might as easily have been wrong in heaving to as in running. The wind being N.E., he infers that from the position we will put him in, the centre bears N.W. He considers that the barometer and weather indicate that he is on the S.E. edge of a cyclone—the N.E. wind upon which he is running forming a part of a circular storm, and that necessarily the centre is N.W. of him. Considering, further, that in that latitude and longitude the storm is probably travelling W.S.W., he thinks that if he runs S.W. he will be diverging from it, and that, by making use of the storm, he will get fine runs, perhaps for days to come. But if the N.E. wind be only converging towards the fearful storm raging near the centre, that centre, in the first place, bears W. by N. $\frac{1}{2}$ N. instead of N.W., so that the vessel by steering S.W. is not diverging from the centre, as was supposed, but is really drawing nearer to it. In due time the weather gets worse from this very cause; the wind veers more to the eastward, the barometer continues to fall, and the captain begins to doubt whether the storm may not after all be progressing more to the southward than he supposed—whether indeed it may not, although so far to the eastward, be actually recurving, and he naturally becomes anxious, and uncertain what to do. If he decides on running at all risks, he finds the wind still drawing at first more and more easterly, and then more and more southerly, always increasing in fury, and the sea becoming more and more heavy and tumultuous. But run he must now, and he must run dead before it, and being on what I have supposed a line of wind converging to a centre, he finishes by getting into the real hurricane, and loss and disaster are imminent. He may, however, if his ship be tight and staunch, and runs well, get round to the N.W. side of the storm, and so get clear probably with loss of spars and sails; but he has clearly run into what he was running to avoid, because he was under the impression that the winds within the influence of a cyclone, although far

from its centre, blew in circles round that centre, the wind everywhere clearly indicating the exact, or nearly exact, position of that centre.

These opinions I submit with very great diffidence for the consideration of seamen and cyclonists. I am not going to attempt the setting up of any dogmatic theory of mine own, but I am inclined to think that this theory of converging winds will probably account for the manner in which many vessels have become entangled in hurricanes when seeking to avoid them according to cyclonic rules. Like all other theories on this very important subject, it requires very careful consideration; but there can be no possible risk in deducing from it the rule, that vessels on approaching what the barometer, the state of the weather, and the force of the wind, clearly indicate as the dangerous side of a cyclone, should, in seeking to avoid it, keep the wind quite four points on the port quarter. With the wind thus free, a fast ship would run with great rapidity through the water, and unless the storm were advancing on her in a direct line, would be always increasing her distance from its centre and getting into finer weather, and, in any case, would have a very good chance of running across its track, and thus avoiding it. Ships running into cyclones on their equatorial sides are to a very great extent without excuse. There are, however, some exceptional instances, but they are very rare.

WRECK OF THE SEA.

Among the many improvements made in the methods of dealing with questions of public importance in this country within the last twenty years, few have been more marked than that made in connection with the administration and management of "wreck of the sea." It is true, from the earliest periods of our history, regulations of some kind or other with regard to wreck have existed. But, although the laws respecting the rights of the Crown, of Lords High Admirals, and Lords of Manors, have from time to time been defined, it was found in the end that all was reduced to a state bordering on chaos, and that such rights, so far from being respected, had almost merged themselves into the simple plan of "who finds, keeps." Nor was this the worst. Under a system (practically no system at all) which allowed of so much latitude as to the ultimate disposal of wrecked property, the offence of wrecking assumed at many parts of the coast the most alarming proportions. Too often in cases of large shipwrecks the saving of life was totally lost sight of by the people on shore, who, tempted by the hope of plunder, cared for nothing beyond the chance of enriching themselves from the property washing up with the waves. Happily, such a state of things is dying out.

There are still exceptional cases, however, in which wreck is plundered wholesale, as at great calamities, such as the wreck of the *Kinsale* and *Royal Adelaide*. There are also portions of the coast on which, as it were by consent, wreck is appropriated. This results from the fact that coastguard officers are not stationed on the coast with the primary view of protecting wreck, but for revenue purposes, or so as to be near the coastguard drill ships; although if a wreck happens where they are stationed they act and act vigorously. To explain what we mean we must point out that there are no coastguard whatever on some parts of our coasts, and where this is the case, as in some parts of Ireland, property can be, and is, plundered and appropriated to any extent. In one small district alone, which we can name, but don't, something like £2,000 worth of wreck has been appropriated in a short time, and all chance of tracing the missing ships obliterated.

By the Merchant Shipping Act of 1854, the treatment of everything coming under the denomination of *wreck*, whether claimed by the owners or not, was placed entirely in the hands of the Board of Trade, and that department, acting on the powers thus conferred, immediately appointed receivers of wreck at all the principal ports in the United Kingdom, for the purpose of carrying out the provisions contained in the Act above mentioned.

In the term *wreck* is included everything that, having formed part of the hull, cargo, or appurtenances of a ship or vessel, is found in, or on the shores of, the sea or any tidal water. The old subdivisions of flotsam, jetsam, lagan, and derelict are things of the past, all being comprised in the meaning of the Merchant Shipping Act, in the one word *wreck*, and over everything coming within that definition the receivers have unlimited control. Any person recovering such property is bound by the law to report the fact to the nearest receiver of wreck, even should the proper owner be known to the finder.

One of the most striking features in connection with the *wreck* thus reported, is the astonishing variety of the articles of which it consists. Like the proprietor of a backwoods store, the receiver of wreck deals in literally everything. From a cocoa-nut to a coffin, there is scarcely a single production, either natural or artificial, that does not, at one time or another, come into his custody. Broken timber, rigging, ship's boats, anchors, chains, casks of spirits, messages in bottles, "royal fishes," passengers' luggage, broken spars, tobacco, carcases of animals, cabin furniture, seamen's wearing apparel, bales of cotton, casks of oil, and, in fact, every conceivable kind of merchandise, is, from time to time, delivered into his hands to be dealt with and distributed among the legal claimants.

On all property taken charge of by a receiver of wrecks, a commission at the rate of 5 per cent. on the estimated gross value is charged.

This commission is carried to the credit of the Mercantile Marine Fund, and is charged to the owner in addition to any expenses that may have been incurred for salvage, before the property is given up to him. An owner of wrecked property must produce evidence of ownership, and substantiate his claim within twelve months from the time of the *wreck* being reported to a receiver; after that period has elapsed, no claim of ownership need be recognized, and the property becomes the possession of the Crown, or lord of the manor, as the case may be. Should the article reported be under the value of five pounds, it may be sold by the receiver immediately on coming into his custody; but if above that value, it must be retained twelve months before being disposed of—that is, if not of a perishable nature, and likely to depreciate in value by keeping, in which case special instructions as to its sale may be issued by the authorities at the Board of Trade. When *wreck* has been sold, the proceeds of sale are subject to precisely similar conditions with regard to the claims of owners, or the property itself.

All *wreck* which remains unclaimed by an owner becomes the property either of the Crown or lord of the manor. The right of the Crown to wreck seems to date from before the time of the Norman conquest, since, under the feudal system, it was the law that all goods left without an owner, in which category *wreck* was included, became the property of the sovereign. And again in a statute of 17 Edward II., the king was declared to be entitled to all *wreck of the sea* throughout the realm. The reason of this law, in the opinion of Lord Coke, was, "that such goods as no subject can claim any property in doe belong to the king by his prerogative as treasure trove straying *wrecke of the sea*, and others, because of ancient times, when the art of navigation was not so perfect, nor trade of merchandize grown to such perfection as now it is, it was a matter of great difficulty to be proved in whom the property of goods wrecked at sea was." He adds, "others have yielded another reason, that the king, by old custom of the realm, as lord of the narrow sea, is bound to scoure the sea of the pirates and petty robbers of the sea; and so it is read of the noble King Edgar, that he would hence in the year scoure the sea of such pirates, &c., and because that could not be done without great charge, the law gave to him such goods as be wrecked upon the sea towards such charge."

The rights of lords of manors to unclaimed wreck are almost coeval with those of the Crown. The latter seems to have sacrificed its privileges in this respect in many places very shortly after they were acquired. An early instance of this is found in the grant by Edward the Confessor to the abbey of Ramsay, of the manor of Ringlide, "with all wreck of the sea." Since that time, grants by the crown to lords of manors, of wreck cast upon their lands have been far from uncommon;

but even where such grants cannot be clearly proved, the right to wreck has often been enjoyed by prescription presumably founded on a grant from the Crown. The title by prescription is based on the principle recognised by most writers on the common law of England, that any person who has a quiet and uninterrupted enjoyment of anything for a certain number of years, is supposed to have a just right, without which he would not have been suffered to continue in the enjoyment of it.

In this way every lord of manor who, at the time of the passing of the Merchant Shipping Act of 1854, could prove his title to wreck, either by prescription or royal grant, was recognized as being entitled to all unclaimed wreck thrown ashore upon his manor, and the receivers in whose districts lands thus privileged are situated, are directed in the instructions issued to them by the Board of Trade to serve their proprietors with a notice whenever *wreck* is cast ashore upon their property.

But, although a notice is to be served at the time of the property coming on shore, the title of the lord of the manor is not of any real value until twelve months have elapsed, when no claim of ownership can be preferred. Then he is dealt with on precisely the same footing as the real owner would have been had he come forward; the property, itself, or the net proceeds of sale, after deducting salvage and commission, being handed over to him by the receiver, on his giving a receipt for the same. In the case of *wreck* from "bumping" on a manor, *i.e.*, occasionally floating and occasionally resting on the ground, the lord of the manor is entitled to only one-half the property, or the net proceeds, the remaining half falling to the share of the Crown. To *wreck* found afloat there is no manorial title whatever, everything so found belonging entirely to the Crown. The practice of dividing the spoil in the case of "bumping" *wreck*, seems to have grown from custom, rather than from any legal enactment, since no law upon the subject appears to be in existence.

There is one claimant who differs from the rest in being entitled to all *wreck* found within the limits of his domain, whether ashore, "bumping," or even floating, withing three miles of low-water mark. This is the Lord Warden of the Cinque Ports. The right to wreck of the sea is one of the privileges still enjoyed by the holder of this once important post. It seems to have been inherited from the Admiral of the Cinque Ports, an office now extinct, who for the past two or three centuries, appears to have claimed everything found upon the sea within the limits of his jurisdiction.

From the first creation of the Cinque Ports, shortly after the Conquest, wreck seems to have been dealt with on different principles to those which prevailed at other parts of the coast, and in the reign of Edward I. we find a charter granting the right of wreck to the barons of the Cinque

Ports, "to assist them in raising supplies for fitting out their fleet." Richard II. extended the grant of Edward I. relative to wreck, to places adjoining the liberties of the barons of the Cinque Ports. The grant included flotsam, jetsam, lagan, and derelict, and the privilege appears to have been enjoyed by the barons of the five ports during several reigns, until 1525, when the magistrates, having determined to take all wrecks to themselves, decreed that all "wrecks of the sea" should belong to the jurats of the port where they were found. Subsequent to this decree of the magistrates, the admiral of the Cinque Ports put in a claim, and then began an interminable series of disputes between the barons, the magistrates, and the admiral, as to who really was entitled to wreck. However, the latter appears, eventually, to have got the best of the contest, and having done so, some rather stringent rules were introduced to enforce his claim. It was decreed that any person who found wreck, and failed to deliver it into the custody of the admiral's officers within a day and a half, was to pay the value of the whole wreck, and be fined at the pleasure of the admiral. And, further, since the claiming and dividing wreck goods was found troublesome, it was decreed that if any person should claim, and not be able to prove his right, he should be fined double the value of the property for his presumption. Yet if the admiral took severe measures to make good his title to wreck, he did not fail in doing his duty to prevent wrecks occurring. It was ordained by another decree that if a mariner, by negligence, lost his ship, he was to make full compensation to the owners, or have his head struck off by the side of his vessel. It is more than probable that if such a rule as this were still in existence, the annual wreck chart would be less thickly dotted, though competitors for the office of master might be less numerous.

Though the title of the Admiral of the Cinque Ports was established in so high-handed a manner, the right has been enjoyed by subsequent holders of the office under the sign manual of constitutional Sovereigns.

Strangely enough, where this exceptional right exists, there the sea is, at the present day, richer in its swallowed-up treasures than at any other part of the coast. The quantity of anchors and chains alone, annually reported at Deal and Ramsgate, two of the Cinque Ports, is something astonishing; indeed, so profitable has the dragging for these peculiar marine productions become, that many of the boatmen at those places are occupied during the greater part of their time in "anchor fishing." It is in the Downs the anchors are found most plentifully. There they seem to be cast away literally at random without regard either to their use or value. The reason of this reckless waste lies in the fact that such losses, instead of falling upon the ship, are borne by her underwriters; an entry in the log-book that an anchor was slipped to avoid

collision, or for the safety of the vessel in any other way, or through the snapping of a cable, being quite sufficient to recover payment from the insurers. For the same reason, but very few of the anchors thus cast away bear any marks that could identify them with the ship to which they belonged. The consequence is the majority of them remain unclaimed, and on their becoming out-dated, the lord warden, as a matter of course, reaps the benefit of the owner's neglect.

The rights to *wreck* of lords of manors at other parts of the coast are of but trifling importance compared with those of the lord warden, the chances of valuable property remaining unclaimed by the owners, under the extensive system of insurance agencies which at present prevails, being small. Perhaps on the west coast of Ireland such titles would rank next in value. There large quantities of American timber, borne eastwards by the Gulf Stream, are continually being cast on shore, lost probably from timber-laden vessels that have foundered in the Atlantic, but little of it is ever identified or claimed by an owner. Many lords of manors who are entitled to *wreck*, and whose estates are situated at that part of the Irish coast, find the revenue thus derived so considerable, that they employ men for the express purpose of looking after the timber thrown upon their lands and reporting it to the receiver. Much of this timber shows evidence of having been a long time in the water, the marks by which it might have been identified being obliterated, or what is far worse for the lord of the manor, it is perhaps so eaten into by barnacles as to be rendered worthless for anything except firewood.

It is decided that not only is *wreck* found within the sea limits of the United Kingdom to be delivered up to the receivers, but also *wreck* and derelict property found in any part of the world, if picked up by an English vessel, must be given up on her arrival in this country. It is not often that any such is reported, time being too precious for masters to detain their vessels or leave their course for the purpose of taking what may prove to be of very little value on board. Only in the case of a "derelict" or abandoned vessel is there a fair chance of being repaid. Then if a few hands can be spared to man the prize, a handsome rate of salvage may be expected. But, of course, such instances are rare.

In addition to ordinary *wreck*, the receivers are directed by their instructions to deal with all "fishes royal" found within three miles of low water mark in the United Kingdom. These form a perquisite of the Crown. They are the whale, sturgeon, porpoise, "and any other large fish." The latter part of the definition is, to say the least of it, slightly vague, indeed nothing could be more indefinite. However, for all practical purposes, the term "royal fish" is limited to the whale proper. With the bottle-nosed species or with the porpoise the Board of Trade have no dealings whatever; they are left to the fishermen. But whenever

one of the legitimate kings of the ocean comes on shore, or is taken within the three miles limit, the receivers at once assert their rights, and the monster is treated in precisely the same manner as though he had formed part of the hull, cargo, or appurtenances of a ship or vessel.

On looking at the entire question of *wreck of the sea* it cannot be denied that a complete system of government supervision is of the highest importance, not only to the shipowner, but also to every merchant who has property transported by sea. The profits divided from *wreck* by the Crown are but trifling, even when including those obtained from unclaimed *wreck*, and the commission of five per cent. on the estimated value of all property taken charge of by receivers as well. (It must be remembered that in no case must the commission exceed the sum of twenty pounds on the hull or cargo of a single vessel, no matter what may be the value of the property saved.) But the result of the Crown's interference is not to be judged by the revenue so obtained. Standing in the position of guardian rather than claimant, to wrecked property, the Crown by its interposition prevents all the confusion that, without such interference, would assuredly arise, as to the ultimate disposal of all the waifs and strays continually being cast up by the sea around our shores. It is not with reference to scattered articles coming on shore here and there that the priority of its right to interfere is felt most beneficially. It is when a large vessel happens to be breaking up close to the land, and her cargo is drifting on shore by wholesale, that the authority of the receivers of wreck is of the highest value. Then it is that these officers are empowered, in the absence of the master and owner of the vessel, to give instructions, not only for the recovery of the property, but also for the saving of life. On such an occasion the receiver is legally in command of all present, and any person acting in contravention to his directions, is liable to fine and imprisonment. Without the presence of some one in authority at such a time, the terrible scenes of plunder and confusion that almost invariably attended a large shipwreck in the good old days, would in all probability be re-enacted, even in the present time.

It may be there are still some faults in our system of wreck administration. It has been accused of being an expensive one; but in considering the question of expense the fact must not be lost sight of, that wrecked property is often saved only with a great amount of trouble, if not with actual personal risk to the sailors. A cargo, or portion of a cargo, is very easily dealt with in a dock where every mechanical appliance is at hand, but when thrown upon some remote part of the coast to which even access is difficult, its treatment presents quite a different aspect, and it must not be wondered at if the expenses consequent upon its recovery under such circumstances assume proportions that to the uninitiated seem rather extravagant.

Taking all into consideration, it is doubtful if there is any country in the world where either the shipwrecked mariner or the castaway ship is more certain of being dealt with systematically and legally than in England.

THE DEPTHS OF THE SEA.

UNDER the above title, Dr. Wyville Thompson has given us a large and interesting volume, containing an account of the general results of the dredging cruises of H.M. s.s. *Porcupine* and *Lightning* during the summers of 1868, 1869, and 1870. It had been originally intended that the popular exposition which this volume provides should have been the joint production of the three gentlemen under whose scientific direction these dredging operations were carried on—viz., Dr. Carpenter, Mr. J. Gwyn Jeffreys, and Dr. Thompson. As, however, this arrangement of joint authorship was not found feasible, it was determined that the last-mentioned should take upon himself the office of reporter, and thus avoid the difficulties and inconveniences of a continued correspondence. It is needless to observe that the office has been very well filled, and that the book before us is all that could be desired, with the exception, perhaps, of some occasional repetitions, which add unnecessarily to the bulk, without increasing the value of the subject matter.

It is hardly an exaggeration to state that a new world has, as it were, been discovered by these operations during the last six or seven years. Hitherto the condition of the bed of the deep sea, containing an area of no less than 140,000,000 of square miles, was altogether unknown to us, and was supposed to be a cold, dark, barren waste. Let us see what Professor Thompson has to say about it; he writes of it as follows:—

"It is inhabited by a fauna more rich and varied on account of the enormous extent of the area, and with the organisms in many cases apparently even more elaborately and delicately formed, and more exquisitely beautiful in their soft shades of colouring, and in the rainbow tints of their wonderful phosphorescence, than the fauna of the well-known belt of shallow water teeming with innumerable invertebrate forms, which fringes the land."

Again, in his account of the cruises of the *Porcupine*, he writes with reference to a dredging in the comparatively shallow depth of 445 fathoms, and a temperature of 7° 5′ C.: "This haul was not very rich, but it yielded one specimen of extraordinary beauty and interest. As the dredge was coming in, we got a glimpse from time to time of a large scarlet urchin in the bag. We thought it was one of the highly-coloured forms of *Echinus flemingii*, of unusual size, and as it was blowing fresh, and there was some little difficulty in getting the dredge capsized, we gave

little heed to what seemed to be an inevitable necessity—that it should be crushed to pieces. We were somewhat surprised, therefore, when it rolled out of the bag uninjured; and our surprise increased, and was certainly in my case mingled with a certain amount of nervousness, when it settled down quietly in the form of a round red cake, and began to pant. I had to summon up some resolution before taking the weird little monster in my hand, and congratulating myself on the most interesting addition to my favourite family which had been made for many a day."

All this is the more surprising when we remember that less than twenty years ago almost all naturalists were of the opinion that there was a bathymetrical limit to life, and that beyond a certain depth the conditions were such as to preclude the possibility of animal existence. These conditions were complete darkness, excessive pressure, coldness of temperature, and defective aëration. And such are still conceived to be the conditions appertaining to the bed of the sea at a depth of over 2,000 fathoms, notwithstanding that animal life is found to exist therein.

Thus the naturalists who imagined that there was a bathymetrical limit to life were correct as to what they supposed were the conditions of the deep sea, but were incorrect, so far as they held that animal life could not exist therein. And here we would observe that had the late Dr. Whewell been in possession of these facts, we think he would never have ventured to write his well-known treatise, called "The Plurality of Worlds." For surely if living organisms of any sort can exist in the conditions above referred to, it must be utterly futile to discuss the limits of existence in other planets. The subject of "lunar politics," to which Professor Huxley sometims jocosely refers, could not be less edifying.

During the several cruises of H.M. s.s. *Lightning* and *Porcupine*, Dr. Thompson informs us that sixteen hauls of the dredge were taken in the Atlantic, at depths beyond 1,000 fathoms, and in all of them life was abundant. Two casts were also taken in depths greater than 2,000 fathoms; and with the deepest cast—viz., 2,435 fathoms off the mouth of the Bay of Biscay, "living well marked and characteristic examples" of all of the five invertebrate sub-kingdoms were taken. We certainly agree with Dr. Thompson when he states that if there be nothing in the conditions of a depth of 2,500 fathoms to prevent the full development of a varied fauna, it is impossible to suppose that even an additional thousand fathoms would make any great difference. But on this matter any doubt that may still linger in our minds will soon be cleared away by the operations of those on board H.M.S. *Challenger*. We can only hope that Professor Thompson will be able to give us another volume at the close of his present cruise, as interesting and instructive as the one before us.

Before ending our notice of "The Depths of the Sea," we would observe that we were somewhat surprised to find that the cause, or causes, of the Gulf Stream is still a moot point among scientific men. Dr. Carpenter, following the theory of Captain Maury, holds that the motive impulse is due simply to the oscillation of temperature between tropical heat and evaporation on the one hand, and Arctic cold on the other. Professor Thompson, however, is not content with this explanation, but opposes to it his own hypothesis, which supposes it to be caused by the "drift of the trade winds." We should have thought that some general opinion would have been arrived at ere now by scientific men on this subject. For ourselves we can only repeat Pope's line,

Who shall decide when doctors disagree?

SOCIETIES, MEETINGS, &c.

Royal National Lifeboat Institution.

A meeting of this institution was held at its house, John Street, Adelphi, on Thursday, 6th March, Mr. Thomas Chapman, F.R.S., V.P., in the chair. On the invitation of the local residents, lifeboat establishments were ordered to be formed at Dunwich, Suffolk; and Rogerstown, Ireland. Reports were read from Captain J. R. Ward, R.N., the inspector, and Captain D. Robertson, R.N., the assistant-inspector, of lifeboats to the institution, on their recent visits to the coast. The proceedings then terminated.

Royal Geographical Society.

10th March, 1873. Major-General Sir H. C. Rawlinson, K.C.B., President, in the chair.

A paper was read, descriptive or the interior of the island of Formosa, by Mr. J. Thomson, who had recently succeeded, in company with Dr. Maxwell, in penetrating to the great mountain range which traverses the island from north to south. He landed first at Takow, a port on the south-western coast, and thence proceeded to Taiwanfu, a seaport containing 70,000 inhabitants further to north, which place formed the starting point of the journey into the interior. The western side of the island, settled by the Chinese, is highly cultivated for some distance and dotted with farms and villages; further inland the hilly country commences, and the central axis, together with the whole eastern side, is in the possession of savage aborigines belonging to the Malay race. The author described the central mountain range as richly wooded, rising tier above tier and culminating near the part visited in Mount Morrison,

11,000 feet above the sea-level. The mountain torrents had worn deep ravines in the rocky slopes on their course to the plains, and with their clothing of rich tropical vegetation formed scenes of wonderful grandeur and beauty. Photographs of many of these scenes, as well as of groups of natives, were exhibited. The travellers reached the village of Pa-ah-liau, belonging to the Pepohoan tribe. These people spoke a language showing a remarkable similarity to that of the Malays of Singapore. These were a robust, erect, well-built people, thorough savages in demeanour, and of aggressive disposition. Traces of coal were found in the dry beds of one or two streams, showing that coal, which now forms an important article of export in the north of the island, is widely distributed. An interesting discussion followed, in which Admiral Collinson, Mr. Margary (who had both visited Formosa), and Mr. Winchester, took part. The President at the end of the meeting announced the receipt of letters that morning from the two African Expeditions sent out by the Society. The Congo Expedition, under Lieutenant Grandy, had arrived at St. Paulo de Loanda on the 20th of January, and were making preparations for starting into the interior. The East African Expedition had been finally organized by Sir Bartle Frere at Zanzibar, and was expected to commence its journey in a few days after the date of the despatches (February 18th). Lieutenant Cecil Murphy, of the Royal Artillery, had joined the party, who were under orders to proceed to Ujiji, and on meeting with Livingstone to place themselves at his service, to be employed in any direction the great traveller might choose.

BOOKS RECEIVED.

The British Constitution and Government. By Frederick Wicks Second edition. London: Collings and Appleton, 1, High Holborn.

As the major portion of this work appeared originally in the shape of monthly contributions to the last volume of the *Nautical Magazine*, we have some hesitation in speaking of it in the eulogistic terms we might otherwise be disposed to use respecting it. We have, however, no hesitation in recommending the completed work to our readers as a book of reference of peculiar interest at this epoch. The tendency to talk glibly about the duties and obligations of Her Majesty's Ministers, and the ignorance generally prevailing upon such subjects, has been largely illustrated of late; and we welcome this second edition, in the hope that some of that ignorance may be dispelled by it. Many, even, of our journalists would probably have been a little more accurate in their recent forecasts, if they had procured a copy of this book, and a careful student of its pages might have secured a reputation at his club during

the past month, by carefully applying the leading principles they enunciate. But the completed volume does not only give information respecting changes of Government, nor the minute details of Parliamentary procedure, nor the history and method of the administration of justice, with all of which the writer has probably made our readers familiar, but it gives a condensed and yet comprehensive account of the growth of the Constitution. This part of the work has not appeared in our pages; we can therefore speak more freely of it. We regard it as a model of condensation and completeness. In the brief space of seventy pages the whole history of the Constitution is traced. Commencing with the days when the Britons wandered through the island, nomadic fashion, we are brought down to the passing of the Reform Bill, when Parliamentary government may be said to have been thoroughly established upon the principles which now guide the rulers of the country. The battles between feudalism and freedom, and between prerogative and the rights of the people, are set forth with judicial impartiality; and although the record is brief, we have not detected the omission of a single important passage in the struggle for constitutional freedom carried on by our ancestors. Regarding the work from an educational point of view, it is not too much to say, that the elector who makes himself thoroughly acquainted with the contents of this two shilling volume will be much better able to discharge his duty at the coming election than he who has not.

Ready, O Ready! or, These Forty Years. By the Captain of the *Cumberland*. London: Sampson Low. 1873.

What nautical reader could fail to be favourably impressed with the author of such words as the following: "Heaven is as near by water as by land; and to those who have seaward longings, who are destined to be sailors, let me add for their own special encouragement, that I esteem it the purest, healthiest life for soul and body that a boy can enter upon—the life best fitted above all others to bring out the manhood of a lad, and to lead him upwards to the Source from whom all true manhood springs."

This paragraph meets us early in the little work by the Captain of the *Cumberland*, and we find that the same spirit runs through to the very last page. We have seldom met with a book which has so healthy and so manly a tone in regard to the education and life of a sailor. We remember something like it in Captain Alston's book on seamanship; but the Captain of the *Cumberland* enriches and enlivens his moral teaching by pleasant speech, interesting and exciting narrative, and withal a straightforward, honest and hearty manner, which will, of a certainty, win the favour of the "young fellows" to whom he so genially addresses himself.

The *Cumberland* is a training ship in the Clyde, and we almost envy the "young fellows" who have the author of this work for their superintendent. He tells us, "I allow the 350 boys on board here full permission to appeal to the *ultima ratio regnum*, whenever they choose, by simply asking leave. An officer is present to see fair play, and the consequence is that I do not think there has been a fight for the last two years, whereas, formerly, when fighting was stopped, there was a fight on the forecastle going on nearly every evening."

Undoubtedly, the book, as a whole, is good. Whether we follow the author through tropical regions, and enjoy with him the voluptuous beauty of the lands of palms and spices, or glowing with enterprise and invigorated life, lead an adventurous time among fields and bergs of ice, in the Arctic regions; whether we follow him in small but exciting engagements with the Chinese or pirates; or, with him, creep round the dreadful ledge of the Greina pass in the Alps; whether we are with him on board ship, in the stern exercise of duty, or in his wooing of the princess, who dwelt on the Kentish coast; everywhere he is a genial, pleasant, and beneficial companion, and sailors, old and young, we are sure, will delight in his book.

Notwithstanding all this, we must add that the theory of special Providence, as put forward in his work, is not, in our opinion, calculated to develope a self-reliant and strong-willed spirit in a young sailor. We do not wish to say one word against the simple faith and earnest piety exhibited in the book, but we do feel bound to say that such stories as the following (of which there are more than one) are really demoralising to young readers. It appears that on one occasion, the ship of which the author was an officer, had been sent to look for a wreck which had been reported, and the writer says, "I prayed to God all day that he would show it to me." After a long search in vain, they gave it up in despair, and then our author tells us "Sadly disappointed, I came down also; but when I got down on the hammock netting, I thought to myself, 'How strange that God does not answer this prayer' . . . . So, turning to take one last look round, I said, 'Wilt thou not answer my prayer, O Lord?' and there was the wreck on our starboard beam, not two hundred yards off!" The common sense of our readers will probably admit that this is going rather too far.

Del Primato Italiano sul Mediterraneo del Conte Luigi Campo Fregoso. Turin. Ermmano Loescher, 1872.

This work discusses the question of the supremacy of Italy on the Mediterranean, taking, separately, her geographical position, her intellectual, political, religious, and historical greatness, and, lastly, her maritime supremacy. The author may, perhaps, induce some of his

countrymen to share his beliefs and hopes, but an Englishman, we fear, will hardly be disposed to agree with some of them, especially when he thinks of Gibraltar and Malta. However, we cheerfully recognise the important progress made by the Italian Marine of late years, and such hopeful and pleasant books as the one now before us will certainly give it a stronger impetus forward. The author's practical conclusion is of some weight—viz.: that there is an urgent necessity for a complete survey of the whole of the Mediterranean basin. The work would be a useful one, and we hope the Italians may be induced to undertake it.

Cosmos.—In January, 1873, a new geographical magazine was commenced in Italian, under this title, under the management of Guido Cora, of Turin. Dr. A. Petermann strongly recommends the work, and it can be ordered through any bookseller in London. The publication will be bi-monthly. The specimen copy sent to us gives promise. It is elegantly printed, and the maps are good. From the prospectus it appears that "The author's purpose in instituting this Magazine is to examine all recent scientifical journeys, to bring their results to light, to show the consequences of those expeditions, and to glance over the works published touching the said journeys, and over the materials collected in other explorations." As it is not possible now-a-days to discourse of geographical subjects, without entering into researches upon geognosia, botany, zoology, anthropology, ethnography, the author thought to give an idea of his "Communications on the most recent and most remarkable progress of geography and akin sciences," by giving to his Magazine the denomination of "Cosmos."

STUNNED BY A METEOR.—Mr. Robin Allen, Secretary to the Corporation of the Trinity House, writes as follows:—On the 13th of November last, at 2 a.m., a meteor burst against the Seven Stones lightvessel, belonging to this corporation, and moored about nine and a half miles E. by N. of the Scilly Islands; and that it has been reported that the watch were struck senseless for a short period, seeing nothing before the shock, but that, on recovery, balls of fire, like large stars, were falling in the water, like splendid fireworks, and that the decks were covered with cinders, which crushed under the sailors' feet as they walked. It appeared, the men said, as if something was passing swiftly, and met with the obstruction of the vessel and burst. The superintendent reports that the men say there was a very decided smell of brimstone, but adds that they did not mention that until he asked them. There is reason to fear that the cinders were all washed off the decks by the rain and sea before daylight; and it happened also unfortunately that the men did not think to observe the compasses.

MONTHLY ABSTRACT OF NAUTICAL NOTICES.

No.	Place.	Subject.
74	Japan—Inland Sea—Nube Sima	Establishment of a Light.
75	North Sea—Jutland—Graa Deep and Esbjerg	Establishment of Leading Lights.
76	Sweden—Gulf of Bothnia—Oregrund Bay	Establishment of a Light Vessel.
77	Sweden—Gulf of Bothnia—Oregrund Bay—Djursten	Alteration in Light.
78	Sweden—Gulf of Bothnia—Finngrund Light Vessel	Alteration in Position.
79	Sweden—Gulf of Bothnia—Rödkallen Rock	Establishment of a Light.
80	Baltic—Gottland—Närsholmen Light	Additional Particulars.
81	Baltic—Gulf of Bothnia—Skagerrack, &c.	Establishment of Fog Signals.
82	English Channel—Scilly Islands—St. Mary and Broad Sounds	Buoyage.
83	Mediterranean—Ionian Sea—Cape Nau, or Colonne	Establishment of a Light.
84	Adriatic—Lissa Island—Comisa Harbour	Establishment of a Harbour Light.
85	Adriatic—Trieste Harbour	Establishment of a Fog Signal
86	Gibraltar Strait	Wreck between Pearl Rock and the shore.

NAUTICAL NOTICES.

74.—Japan.—*Inland Sea.—Nube Sima.*—A *fixed white* light of the third order is now exhibited 85 feet above the sea on Nube Sima, near the southern extremity of Yo Sima, Bingo Nada. The light should be seen 15 miles. Position, lat. 34° 23′ N., long. 133° 49′ E.

75.—North Sea.—*Jutland.—Graa Deep and Esbjerg.*—From the 15th April, two leading lights of the third order will be exhibited on the Seding Strand, as leading lights for the Graa-deep. The lights will be *fixed white* lights of the third order, bearing E. by N. ¾ N., and W. by S. ¾ S., distant nearly 700 yards from each other, and visible through an arc of 9 degrees on either side of the bearing E. by N. ¾ N. The low or western light is 41 feet above the level of high water, and the high or eastern light 78 feet; they should be seen respectively 11 and 14 miles. Position of the high light, lat. 55° 30′ N., long. 8° 24′ 30″ E. Also, two leading lights, placed on a S.E. ¼ S. bearing, and visible through an arc of 9 degrees on either side of that bearing, will be exhibited from the jetties of Esbjerg harbour to lead to that port.

76.—Sweden.—*Gulf of Bothnia.—Oregrund Bay.*—In accordance with previous notice the light-vessel is now in position, and exhibits a *fixed white* light, 22 feet above the sea, and should be seen 8 miles. The vessel is moored about half a mile from the Länsman shoal, and is painted

red, with *Grepen*, in white letters, on her sides. Position, lat. 60° 27′ 30″ N., long. 18° 17′ E. The light-vessel is removed when endangered by ice. In thick or foggy weather a gong will be sounded.

77.—SWEDEN.—*Gulf of Bothnia.—Oregrund Bay.—Gräso.—Djursten light.*—The light now shows *red* between the bearings S. and S.E.

Note.—The upper portion of the tower will be rebuilt during the present year, and, whilst building, a temporary light of less power will be exhibited.

78.—SWEDEN.—*Gulf of Bothnia.—Finngrund Light-vessel.*—In accordance with previous notice, this light-vessel has been moved, and now lies two miles N.E. of the northernmost of the East Finngrund shoals, in lat. 61° 1½′ N., long. 18° 31′ E.

79.—GULF OF BOTHNIA.—*Rödkallen Rock.*—In accordance with previous notice, the light on this rock is now exhibited. It is a *revolving* light showing a *flash* of about *fifteen seconds'* duration *every minute*, elevated 84 feet above the sea. The tower, 72 feet high, is an open iron structure painted red.

80.—BALTIC.—*Gottland.—Närsholmen Light.*—The flashing light shows *six flashes* of *three to four seconds'* duration *every minute*. It is elevated 70 feet above the level of the sea, and should be seen 12 miles. The tower is 55 feet high, and, with the keeper's dwelling, forms a good landmark.

81.—BALTIC.—*Gulf of Bothnia, Kattegat, &c.*—The following fog signals have been established at lighthouses:—

Bjorn, Bothnia gulf	2 guns.
Landsort...	2 guns.
Faludden, Gottland	2 guns.
Olands, south point	2 guns.
Nidengen, Kattegat	3 guns.
Mäseskär	2 guns.

On hearing a fog signal from a vessel, it will be answered by the number of guns at the lighthouse. An immediate answer to a repeated signal cannot be depended on. Single guns from the light stations are intended to warn vessels. Fog bells are established at Svartklubben, and on board all the light-ships, excepting Carlskrona. Gongs have been established at Bjurö-klubb, Eggergrund, Ago island, Simpnäs-klubb, Landsort, Femörehufrud, Faro, Faludden, Grimskar, and Wäderöbod lighthouses, and in Carlskrona light-vessel.

82.—SCILLY ISLANDS.—*St. Mary and Broad Sounds.*—In order to facilitate the navigation of the entrances to St. Mary road, the following buoys have been established:—

St. Mary Sound.—Spanish Ledge.—A *conical* buoy, painted in *black and white vertical stripes*, moored in 6 fathoms at low water spring tides, with—

West end of Great Minalto in line with north end of Mincarlo ... ... N.N.W. ½ W.
St. Agnes lighthouse... ... ... W. ¼ N.
Woolpack beacon ... ... N. ¾ W. half a mile.

Bartholomew Ledge.—A *conical* buoy, painted in *black and white vertical stripes*, moored in 7 fathoms at low water, with—

Little Smith in line with Bishop lighthouse ... ... West (southerly).
West end of Great Minalto in line with north end of Mincarlo ... ... N.N.W. ½ W.
Woolpack beacon ... ... S.E. by E. ¼ E., 2½ cables.
St. Agnes lighthouse... ... ... S. W. by W. $1\frac{1}{10}$ miles.

Broad Sound.—Old Wreck.—A *conical* buoy, painted *black*, moored in seven fathoms at low water, with—

Bishop lighthouse ... ... W. by S. ¼ S., $8\frac{1}{10}$ miles.
St. Agnes lighthouse ... ... S.E. ¼ S., 1½ miles.

83.—MEDITERANEAN.—*Ionian Sea.—Cape Nau or Colonne.*—A light is now exhibited from a lighthouse on Cape Nau or Colonne, south-east coast of Italy. The light is a *fixed white* light, of the first order, 133 feet above the level of the sea, and should be seen 20 miles. The tower is octagonal shaped, coloured white, and is attached to the keeper's dwelling. Position, lat. 39° 6′ N., long. 17° 13½′ E.

84.—ADRIATIC.—*Lissa Island.—Comisa Harbour.*—A *fixed* light, showing *red* seaward and *white* towards the harbour, is now exhibited from a lamp-post on the extremity of the mole in the harbour, west side of the island. Position, lat. 43° 2′ 20″ N., long 16° 5′ E.

85.—ADRIATIC.—*Trieste Harbour.*—The fog bell on the northern point of San Teresa mole has been replaced by a steam trumpet, which, in thick or foggy weather, will sound *two blasts* of *six seconds' duration*, followed by an interval of *fifteen seconds.*

86.—GIBRALTAR STRAIT.—A wreck now lies nearly midway in the channel between the Pearl Rock and the shore, and although the upper masts (which show above water) denote the position at present, the vessel will become a sunken unmarked danger when they are not seen. The wreck lies in 7¼ fathoms, N.W. by W., 3 cables from the Pearl Rock; S.S.W. ½ W., 4 cables from Palomas island; and E. S. E., 6 cables from Fraey Point.

OUR OFFICIAL LOG.

GALLANTRY REWARDED.—The Marine Secretary to the Board of Trade, Mr. Thomas Gray, has just addressed a communication to the White Star Line, relative to the services rendered to the crew of the British ship *Allan* by the steamer *Adriatic*, under the command of Captain Hamilton H. Perry. The communication reads thus:—"I am directed by the Board of Trade to acquaint you that they have awarded an aluminium binocular glass to Captain Perry, and a binocular glass each to Mr. Buckland, second officer, and Mr. W. L. M'Minn, fourth officer of that steamer, which, when complete, will be forwarded for presentation to them in the usual manner. To each seaman of the *Adriatic* who went in the boats of that vessel with the two mates above referred to, a sum of £1 for each trip has been awarded." It is a source of satisfaction to note that the ships of the White Star Line, in addition to having held their own in the tremendous storms which swept the Atlantic at different periods during 1872, have been instrumental in saving from a watery grave nearly 100 lives. On the 8th of January the *Oceanic* sighted a vessel flying signals of distress, and bore down to her assistance, and succeeded, after many efforts, in rescuing nine men. This was the American schooner *Mountain Eagle*, bound from New York for Portland. On the 20th November, the *Baltic* came across the British ship *Assyria*, of Glasgow, in a waterlogged condition, and saved twenty men from this wreck. On the 30th of the same month the *Atlantic* fell in with the American brigantine *Scotland*, bound from Caledonia to Demerara, and saved the entire crew, eight in number. On the 13th December the crew of the *Allan*, twenty-one in number, were rescued with much difficulty and danger by the *Adriatic*. The rescues effected by the steamers *Atlantic* and *Oceanic* were recognised by the American Congress, and Captains Gleadell and Thompson have received votes of thanks for the services rendered to American vessels in distress. The White Star sailing fleet has also participated in the work of saving lives off helpless and sinking vessels. The *Arriero* saved twelve of the crew of the St. John's ship *Sharon*; the *Don Guillermo* ten of the crew of the British ship *Indian Queen*, in the broad Atlantic, having herself experienced the full force of the gales; and, lastly, the *Comadre* saved the whole of the crew (sixteen in number) of the Italian barque *Cadenacci*, bound from Swansea for Valparaiso.

EMIGRATION TO PARAGUAY.—CAUTION TO EMIGRANTS.—In the month of October last the Emigration Commissioners, under instructions from the Secretary of State, put out a notice cautioning British emigrants against proceeding to Paraguay. As, notwithstanding that notice, it is reported that arrangements have been made to establish a regular emigration from

this country to Paraguay, the Emigration Commissioners have been desired again to point out to the labouring classes the risks they incur by emigrating to that country. It is right that intending emigrants should know that the emigrants who went out in October last, when they arrived at Asunçion on 9th November, found that no preparation had been made to receive them; that after being detained in the railway station two days they were forwarded to Paraguari, a distance of forty-six miles, the journey, on account of the defective state of the railway, occupying upwards of seven hours; that no refreshment was provided for them on the road, nor on their arrival; and that the only shelter for the women and children at Paraguari was in the railway station. A fortnight later the emigrants were still at Paraguari, with the exception of seventy sent on to prepare houses and tents at Itape, where it is proposed to locate the emigrants. It is said that the emigrants were extremely dissatisfied with their treatment and position, and almost in a state of mutiny. It is further stated that Itape being in lat. 25.55, the heat there in the summer is so great as to render labour in the field impossible to emigrants from the North of Europe—that the soil in its neighbourhood is not fit for the cultivation of produce suitable for English emigrants—the articles for the cultivation of which it is suited being tobacco, maize, mandioc, orange trees, &c., and that rice, flour, coffee, sugar, and cattle must all be imported, and are consequently very dear. It is further stated that the political condition of the country is such as to make the maintenance of tranquillity precarious, and that the means of protection of life and property are insufficient. Persons of the labouring class should consider well these circumstances before accepting any proposals made to them to emigrate to Paraguay.—By order of the Board, RICHARD B. COOPER, Assistant Secretary.—Government Emigration Board, 8, Park Street, Westminster, S.W., 18th February, 1873.

EMIGRATION.—Board of Trade, Whitehall Gardens, 3rd March, 1873. —Sir,— I am directed by the Board of Trade to state, that as the international code of signals is now being more generally adopted by other countries in connection with merchant shipping, it should be supplied to all ships clearing from this country, under the Passenger Acts. It is understood that the Admiralty have for some time past insisted upon its use on board troop and store ships. I am, therefore, to direct you (unless there should be reasons to the contrary, with which the board are unacquainted, and which you should therefore specially report) to see that in future every ship clearing out under the Passenger Acts has on board the latest edition of the international code book, together with the flags necessary for signalling; and, further, that you ascertain by examination or special certificate that one of the officers on board can read and answer correctly and expeditiously signals made by the code.— I am, &c., signed, THOMAS GRAY.

EXPORT OF GRAIN FROM CYPRUS.—The Board of Trade have received a copy of a despatch from Her Majesty's Ambassador at Constantinople, announcing that the export of grain from Cyprus has been prohibited from the 18th January last.

BOARD OF TRADE.—The Board of Trade have received a copy of a despatch from Her Majesty's Minister at Madrid, announcing that vessels coming from the ports of the Bosphorus, Trebizonde, Salonica, Samsoun (Turkey), Comfida (Arabia), and Persia are no longer liable to quarantine in Spanish ports; also a despatch from Her Majesty's Consul at St. Vincent, reporting that orders have been issued to place all vessels arriving at the Cape Verde Islands from Lisbon in quarantine for fifteen days, inclusive of the time occupied on the passage, whether provided with clean bills of health or not.

ADMIRALTY PAY OF NAVAL OFFICERS IN CIVIL EMPLOYMENT.—The following is the copy of a minute of an important character sent from the Admiralty to the Accountant-General of the Navy:—"Feb. 15. I am to transmit to you herewith for your information and guidance a copy of a letter from the Treasury, dated the 4th instant, being a reply to a letter written from your department on the 30th December last, on the subject of withholding of the retired and reserved pay of naval and marine officers in civil, colonial, or other employments. The Treasury having sanctioned payment of all moneys due on account of the deductions referred to, and a discontinuance of the course hitherto pursued in the case of retired officers, you are to take the necessary steps in the matter.—By command."

BOARD OF TRADE.—MOVEMENTS AMONGST SURVEYORS.—Mr. Parker, now at Newcastle, is to remove to London; Mr. Herriott is to go to Liverpool, with a view to making up short-handed staff there; Mr. Wawn, now at Sunderland, is to go to Newcastle; Mr. Richards, now at Falmouth, to go to Sunderland; Mr. Hoar to Falmouth; Mr. Taylor, jun., now at Liverpool, to go to North Shields; a new assistant engineer surveyor is, we hear, wanted for Liverpool. The above removals will take place on the 1st July. The new assistant will, it is hoped, be appointed for Liverpool at once. There are not enough surveyors at present to do the work of the ports.

MARITIME LAW.

COAL CONTRACT.—BROOK AND OTHES *v.* RICKET AND OTHERS.—In an action which arose out of the late agitation in the coal trade, it appeared that on the 21st of June, 1871, the defendants, who are coal merchants, agreed to supply the plaintiffs with 500 tons of coal, at 13s. per ton, as required. Orders were given under this agreement for the supply of coals on the 19th and 27th September, but no further requisition was

sent in until the 19th October, when the defendants refused to supply the coals asked. It was contended, on behalf of the defendants, that it was an implied term of the contract that the orders for coal under it should be given in a reasonable time. His Lordship left it to the jury to say whether the plaintiffs had sent their orders in a reasonable time, and whether, looking at the dealings which had previously occurred between the parties, they thought the plaintiffs' order had been sent in a reasonable time. The jury answered both these questions in the plaintiffs' favour.—Court of Queen's Bench, before Mr. Justice Blackburn, December 17.

Not Serving Out Lime Juice.—At Plymouth Police Court the master of the ship *Western Star*, of Liverpool, was summoned for omitting to serve out lime juice to the crew during a voyage from San Francisco just completed. The lime juice was on board, but the captain pleaded that he had given the men Australian meat, and that being fresh and not salt, he thought that the lime juice was unnecessary. Penalty, £5.

Rewards.

The Board of Trade have awarded a silver tankard to Captain G. Caspersen, of the Norwegian barque *Express*, and £2 each to the first and second mates of that vessel, in acknowledgment of their services in rescuing the crew of the barque *Dakotah*, of Fleetwood, from their waterlogged vessel on the 26th November last. The *Dakotah* was disabled on the 22nd November, a tremendous sea having swept her decks of everything, including her boats, when she immediately began to settle down and became waterlogged. The master and crew, numbering twenty-one, were ultimately taken on board the *Express*, and landed, at Bristol, on the 11th December, having been treated with the greatest kindness by Captain Caspersen.

Consular Appointments.

Whitehall.—The Queen has been pleased to direct letters patent to be passed under the Great Seal, granting the dignity of a Knight of the United Kingdom of Great Britain and Ireland unto William Hamilton, Esq., Her Majesty's Consul at Boulogne.

Foreign Office.—The Queen has also appointed William Gifford Palgrave, Esq., now Her Majesty's Consul at Trebizonde, to be Her Majesty's Consul in the Islands of St. Thomas and St. Croix, to reside at the former island; John Prat, Esq., now Her Majesty's Consul at Coronna, to be Her Majesty's Consul to the Province of Catalonia, to reside at Barcelona; and William Taylour Thomson, Esq., Her Majesty's Envoy Extraordinary and Minister Plenipotentiary to the Court of Persia to be Her Majesty's Consul-General at Teheran; and has approved of

the following:—Mr. Henry Samuel King as Consul in London for His Highness King John of Ethiopia; Mr. Rutger Klunder as Consul in the Island of Penang for His Majesty the Emperor of Austria; of Mr. John Forbes White as Consul at Aberdeen for His Majesty the King of the Belgians; and of Don Alfredo Castellain as Vice-Consul at Liverpool for the Republic of Chili.

Board of Trade.—Mr. Fortescue has appointed Mr. Richard Valpy to succeed the late Mr. Albany Fonblanque as Chief of the Statistical Department of the Board of Trade and Controller of Corn Returns.

Board of Trade Inquiries at Home.

68. *Ceres*, of Belfast, foundered in Belfast Lough, 19th November, 1872. Inquiry ordered 24th December, 1872. Proceedings pending.

65. *Thames*, of Liverpool, stranded at Richibucto on the 3rd Nov., 1872. Inquiry ordered 31st December, 1872, but subsequently abandoned.

71. *Charles*, of Wexford, supposed to have foundered between Kingstown and Wexford, on or about the 5th January. Inquiry ordered 23rd January, with Captains Harris and Hight as nautical assessors. Proceedings pending.

72. *Northfleet*, of London, in collision and foundered in Dungeness Roads on the 22nd January. Inquiry ordered 27th January, with Captains Harris and Hight as nautical assessors. Proceedings at Greenwich.

73. *William*, of Newcastle, abandoned about seven miles south of the Eddystone on the 26th January. Inquiry ordered 6th February, and held at Plymouth, with Captains White and Stoll as nautical assessors. Master in default. Abandonment premature. Certificate suspended for six months.

74. *Britannia*, s.s., of Glasgow, stranded on the island of Arran on the 27th January. Inquiry ordered 10th February. Captain Hight and Commander A. J. Day, R.N., nautical assessors. Proceedings pending.

75. *Orion*, of Faversham, stranded at Auckland Island on the 11th of December, 1872. Inquiry ordered 14th February. Proceedings pending.

76. *Dasher*, of Amlwich, was abandoned off Kinsale. Inquiry ordered 15th February, Captain Hight, nautical assessor. Proceedings pending.

77. *Kate*, of Middlesborough, foundered off the Cork lightvessel on the 8th February. Inquiry ordered 15th February, Proceedings pending.

78. *Daring*, of Whitby. stranded on the Cross Sands on the 13th February. Inquiry ordered 27th February. Captain White, nautical assessor. Proceedings pending.

79. *Laura*, of Woodbridge, abandoned about twelve miles N. by E. of Huntleyfoot on the 14th February. Inquiry ordered 27th February. Commander Albert Kay, R.N., nautical assessor. Proceedings pending.

80. *Peru*, of Liverpool, abandoned in the Bay of Biscay, on the 22nd January. Inquiry ordered 3rd March. Proceedings pending.

81. *Chacabuco*, of Liverpool, in collision with the *Torch*, of Dublin, off Ormeshead, on the 1st March. Inquiry ordered 4th March. Captains Steele and White, nautical assessors. Proceedings pending.

82. *Knight Templar*, of Glasgow, foundered about 100 miles W. by S. of the Lizard, on the 3rd February. Inquiry ordered 1st March. Proceedings pending.

83. *Staffordshire*, of Liverpool, abandoned in lat. 47 N., long. 15 W., on the 25th January. Inquiry ordered 6th March. Proceedings pending.

84. *Quail*, s.s., of Cork, stranded near Brixton, Isle of Wight, on the 3rd March. Inquiry ordered 8th March. Captain Hight and Commander S. Tuke, R.N., nautical assessors. Proceedings pending.

85. *Star of the Sea*, of Liverpool, stranded at Soldier's Point on the 2nd March. Inquiry ordered 8th March. Captains Steele and White nautical assessors. Proceedings pending.

86. *Bedlington*, s., of Newcastle, stranded off Sables D'Olonne, Vendée, on the 2nd February. Inquiry ordered 8th March, but subsequently abandoned.

87. *Milton Lockhart*, of North Shields, stranded at Hornsea, Yorkshire, on the 26th January. Inquiry ordered 11th March. Commander, James F. Prouse, R.N., nautical assessor. Proceedings pending.

88. *Boyne*, of Scarborough, stranded at Mullion Cove, Cornwall, on the 1st March. Inquiry ordered 11th March. Proceedings pending.

89. *Lalla Rookh*, of Liverpool, stranded off Prawle Point on the 3rd March. Inquiry ordered 14th March. Proceedings pending.

90. *John and Martha*, of London, stranded one mile S. of Flamborough Head Light House on the 25th February. Inquiry ordered 18th March. Proceedings pending.

INQUIRIES ABROAD.

128. *Crixea*, of London, stranded at East London on the 27th November, 1872. Inquiry held at East London, before A. R. Ospen, Esq., resident magistrate, and G. Walker, Esq., assessor. Vessel unnecessarily run on shore by the mate. Certificate cancelled. Master reprimanded for not being on board.

129. *Emblem*, of Barmouth, abandoned off Gottska Sands Island on the 21st January. Inquiry held at Stockholm, before Y. E. Sanson, Esq., H.B.M. Vice-consul, president; Commander H. T. Ellis, R.N.,

and C. Castleman, Esq., nautical assessor. Master wanting in judgment and competency in abandoning his ship without any real cause. Certificate suspended for six months. Mate reprimanded.

130. *Annie Benn*, of Cape Town, stranded off Danger Point, 27th November, 1872. Inquiry held at Mossel Bay before E. C. Crochett, Esq., resident magistrate. Master exonerated. Casualty attributable to the extreme violence of the gale.

131. *Anna*, stranded off the Eagle's Nest reef, Coast of Victoria, on the 22nd November, 1872. Inquiry held before the Melbourne Steam Navigation Board. Master in default. Neglected to take ordinary precautions of navigation during thick weather. Certificate suspended for three months.

132. *Mary Cumming*, stranded near Cape Patten on the 23rd Nov., 1872. Inquiry held before the Melbourne Steam Navigation Board. Master exonerated. Loss of vessel attributable to an error in the compass.

133. *Hurkaru*, stranded at Alamparoa on the 25th November, 1872. Inquiry held at Madras, before A. M. Lys, Esq., J.P., and J. B. Crowther, Esq., deputy master attendant. Master and second mate in default. Casualty the result of a bad look-out and great carelessness. Both certificates suspended for six months.

134. *Lady Cartier*, of Liverpool, in collision with the *Ville de Brest*, French mail steamer, near Maccabee, on the 8th January. Inquiry held at Callao, before T. J. Hutchingson, Esq., H.B.M. Consul, President, Commander H. P. Knevitt, R.N., Lieutenant H. Ludgen, R.N., and R. Roberts, and S. Underwood, master mariners. Master exonerated. French vessel in default in porting her helm.

135. *Secret*, stranded on a reef off Royal Island, on the 17th January. Inquiry held at Bahamas, before J. Strafford, Esq., resident justice. Master exonerated. Stranding caused by the very boisterous and uncommonly dark night.

136. *Minnie Breslauer*, stranded at Bermuda, on the 6th January. Inquiry held at Bermuda, before E. Harvey, Esq., President, M. Frith, Esq., J.P., and H. G. Hunt, Esq., lighthouse commissioner. Master and first officer did not observe due and proper caution in passing so dangerous a coast. Master's certificate suspended for nine months; first officer's six months.

137. *Bessie Searight*, of Hong Kong, foundered off the Amherst Rocks, on the 3rd January. Inquiry held at Ningpo, before R. Vivinhoe, Esq., H.B.M. Consul, President, Lieutenant J. G. Jones, R.N., Lieutenant E. E. Graves, R.N., and W. Hart, and H. Blake. Loss of vessel the result of using mud ballast. Master cautioned.

Naval Courts.

No. 11.—*L'Allegro.*—On the 19th December, 1872, a Naval Court was held at Valparaiso, under the presidency of H.B.M. Consul, to enquire into a charge of drunkenness and endangering lives of crew, preferred against Benjamin Graham, master of the *L'Allegro.* The Court did not consider that the lives of the crew had been endangered, but reprimanded the master for drunkenness.

12.—*Beatrice.*—On the 5th December, 1872, a Naval Court was held at Kanagawa, under the presidency of H.B.M. Consul, to enquire into a charge of incompetency and refusal of duty preferred against Evan Lewis, mate of the barque *Beatrice*, of London. There was not sufficient evidence to enable the Court to decide as to Lewis's incompetency, and they declined to take cognizance of the second charge. He was ordered to be discharged.

13.—*Artistic.*—On the 17th October, 1871, a Naval Court was held at Rio Grande do Sul, under the presidency of H.B.M. Consul, to enquire into a charge of assault, preferred against Joseph Donovan, acting boatswain of the *Artistic*, of Cardiff. He was sentenced to 12 weeks' imprisonment, with hard labour.

No. 1.—*Glaslyn.*—On the 2nd December, 1872, an Official Court of Inquiry was held at Melbourne, into a charge of drunkenness, preferred against John Underhill, mate of the *Glaslyn.* The Court did not consider the charge satisfactorily sustained.

No. 2.—*Glaslyn.*—On the 18th, 20th, and 22nd November, 1872, an inquiry was held before the Steam Navigation Board, Melbourne, into a charge of drunkenness and neglect of duty, preferred against Captain C. M. Rimmer, master of the *Glaslyn.* The charge being proved, his certificate was suspended for twelve months.

Royal Navy and Royal Naval Reserve.

Abbreviations.—Ad., Admiral; A., Assistant; C., Captain; Cr., Commander; C., Chief; Cl., Clerk; Cn, Chaplain; D., Deputy; E., Engineer; F., Fleets; H., Hospitals; I., Inspector; L., Lieutenant; M., Midshipman; N., Navigating; P., Paymaster; r., Retired; S. L., Sub-Lieutenant; Sn., Surgeon; St., Staff; N. Inst., Naval Instructor; 1st Class A. E., 1st Class Assistant Engineer; 2nd Class A. E., 2nd Class Assistant Engineer; N. Ct., Naval Cadet; Ng. Ct., Navigating Cadet; R. N. R., Royal Naval Reserve.

Promotions.—**St. C.**—George Raymond, 1867. **Cr.**—Richard H. Hamond, 1864. **St. Cr.**—Ettrick W. Creak, 1863. **L.**—Gerald W. Russell, 1869. **E.**—John Moysey, 1870. **A. E. 1st Class.**—Robert C. Moon, 1870. **Sn.**—Thomas Kipling, 1859; Samuel Bamfield, 1860; Thomas Cann, M.D., 1860.

Appointments.—**Ad.**—Sir James Hope, G.C.B., 1857, as Principal naval aide-de-camp to the Queen. **C.**—Frederick H. Stirling, 1860, and Charles W. Hope, 1861, to be aides-de-camp to the Queen; John

D. M'Crea, 1862, to *Triumph;* Edmund R. Freemantle, 1867, to *Barracouta.* **St. C.**—George A. Waters, 1871, to Sheerness Dockyard; George Raymond, 1873, to Malta Dockyard. **Cr.**—Alfred Markham, 1867, to *Boscawen;* Orford S. Cameron, 1868, to *Hornet;* John L. Ray, 1870, to *Iron Duke;* Edmund J. Church, 1868, to *Curlew;* Hon. Albert D. S. Denison, 1866, to *Adventure;* Robert M. Gillson, 1866, to *Rifleman;* Robert Pitman, 1867, to *Ringdove.* **St. Cr.**—John F. R. Aylen, 1870, to *Asia.* **L.**—Philip H. W. Mayow, 1863, and Frederic R. Carr, 1866, to *Lord Warden;* John Giles, 1872, Charles G. Gardiner, 1872, and Henry H. Dyke, 1872, to *Excellent;* William E. B. Atkinson, 1869, to *Cockatrice;* Malcolm H. Drummond, 1872, to *Valorous;* Charles H. Cross, 1872, to *Duke of Wellington;* Lynedoch N. Moncreiff, 1865, to *Favorite;* Reginald N. Custance, 1868, to *Excellent;* Charles T. F. Hodgkinson, 1866, to *Pembroke;* James W. Gambier, 1863, to *Asia;* Edward Chichester, 1870, to *Torch;* Edmund F. Jefferies, 1867, to *Excellent,* additional; Charles C. Drury, 1863, to *Iron Duke;* Thomas E. Maxwell, 1871, and Lewis F. Wells, 1869, to *Barracouta;* Edward B. Fletcher, 1871, to *Excellent;* William C. J. Blount, 1865, to *Favorite.* **N. L.**—William H. Hayward, 1865, to *Invincible;* Edmond C. Smith, 1866, to *Pembroke,* for *Encounter;* Albert R. Wonham, 1867, to *Barracouta.* **S. L.**—Samuel Ewing, to *Pembroke;* Arthur Fulonger, Richard W. O. Voysey, and Richard G. Day, to *Black Prince,* as supernumeraries; Arthur T. S. Carter, to *Pembroke;* Francis A. Brookes, Charles H. Cochran, Conyers Long, and the Hon. Harry de V. Pery, to *Barracouta;* William F. Maturin, to *Iron Duke;* Lloyd F. Mathews, to *Duke of Wellington.* **N. S. L.**—William Way, to *Himalaya,* Charles F. Barnard, to *Rifleman.* **M.**—Montague R. Hayes, Augustus L. Knapton, Francis G. Kirby, Codrington P. Bickford, George F. S. Knowling, and Lewis F. C. Jackson, to *Minotaur;* William L. Down, Montagu H. M. Gruggen, Alexander W. Pym, George H. Miller, Henry Preedy, and William W. Smythe, to *Triumph.* **N. M.**—Henry W. Steele, to *Northumberland;* Henry Baker, to *Minotaur;* William B. Fawckner, to *Agincourt;* Frank J. Harwood, to *Valorous;* George H. King, to *Barracouta.* **C. E.**—Edward Ingledew, 1870, to *Barracouta;* John T. Harris, 1872, to *Valorous.* **E.**—William H. Green, 1868, to *Asia,* additional, for *Tyrian;* William A. Betts, to *Asia,* for *Pearl;* William Barclay, 1866, to *Pembroke,* for *Raleigh;* William Todner, 1863, to *Pembroke,* for *Philomel;* Isaac A. Liddell, 1863, to *Asia,* for *Monarch,* William Inglis (*b*), 1865, and William Hankinson, 1868, to *Barracouta;* William Nicklin, 1871, to *Triumph;* James Campbell, 1868, to *Black Prince;* Richard B. Trubshaw, 1867, and William Gentle, 1868, to *Valorous.* **A. E. 2nd Class**—Edward Attwood, 1873, acting, to *Pembroke,* for disposal; John Cocker, 1873, acting, and Joseph Organ,

acting, to *Indus*, for disposal; Richard T. Serle, 1873, to *Indus;* George H. Cooke, 1873, acting, William Armes, 1873, acting, and William J. Mullinger, acting, to *Asia*, additional, for disposal; William Scotten, 1871, to *Rattlesnake*, additional; William Cook, 1872, acting, to *Druid*, additional; William Bromley, 1872, acting, to *Valorous*. **St. Sn.**—Thomas J. Green, 1868, to *Cambridge;* Michael Walling, M.D., 1870, to *Resistance*. **Sn.**—Robert Edwardes, 1863, to *Barracouta*. **A. Sn.**—Lewis Edwards, M.B., 1872, to *Excellent;* John Allen, 1864, to *Valiant;* John O'Neill, M.D., 1873, to *Achilles;* John Wood, 1872, to *Barracouta;* John Rodgers, 1867, to *Fox*. **P.**—William H. Hyde, 1869, to *Barracouta*. **A. P.**—Richard B. White, 1866, to *Pembroke;* William B. Jervis, 1864, to *Duke of Wellington;* Edmund Hickson, 1870, to *Barracouta;* John H. Boulton, 1872, to *Penelope;* Charles Farwell, 1867, to *Rifleman*, in charge.

Retirements.—**C.**—Thomas H. M. Martin, 1872; William H. Fenwick, 1866. **L.**—John Hicks, 1870; Sebastian Gassiot, 1863, as Commander; Sydney A. Roberts, 1872; John G. Y. Holbrook, 1861, as Commander; Butler, J. S. O. Carter, 1870; James F. Baker, 1862, as Commander. **A. Sn.**—John M'Carthy, 1868. **A. P.**—Harry H. S. Andrews, 1866; Thomas E. Goodwin, 1866.

Deaths.—**Ad.**—William Hotham, K.H., 1863, *r.;* Robert Craigie, 1870, *r.* **Ct.**—Robert Mansel, 1865, *r.;* Sackville W. H. Thompson, 1872, *r.;* Michael Turner, *r.;* Edward Dunsterville, 1855, *r.* Edward Digby, 1860, *r.*

Shipping and Mercantile Gazette Correspondence.

(Reprinted by special arrangement with Sir William Mitchell.)

Short Delivery.—We charter a steamer, with A B as merchants, to load a cargo of coal, and in the charter we find clauses running thus:—"Charterers' liability to cease as soon as the cargo is shipped; ship to have a lien on the cargo for payment of all freight, dead freight, and demurrage;" also, "Bills of lading to be signed in accordance with the railway company's weight, the captain verifying the correctness of the same." The steamer delivers all she took in, but in settlement of freight is charged for short delivery. Have we any remedy for this gross imposition; and, if so, who is liable—the merchants, who were shippers, also, or the receiver in France?—The charterers, who professed to have put on board a certain quantity of coal, and did not do so, are liable for breach of contract, and may be sued for recovery of freight and value of goods deducted.

Wrecked Cargo.—My vessel was stranded and sunk with a cargo of china clay on board. She was afterwards raised, but the cargo, being

wet with salt water, became valueless, and the underwriters subsequently abandoned the same. To whom does the cargo belong, and at whose expense must it be landed to repair the vessel?—The cargo belongs to the holder of the bill of lading. The charges for landing the cargo, re-shipping the same, and conveying it to its destination, in order to earn the freight thereon, would be one of general average, and would fall on the underwriters, if the ship is insured.

Pilotage Service.—I am a North Sea and Channel Pilot, and hold a captain's certificate of competency. I lately piloted the Italian barque *No*, from Shields, and all went well until we arrived off Portland, when she was run down by the French ship, *Gastion*. Immediately after the collision I got on board the *Gastion*, and, at the request of her captain, I piloted her into Portland Breakwater. He offered me £2 in full satisfaction for such services, which sum I refused to accept, deeming it too small, as the ship was in a disabled state. What sum could I legally recover for my services in the matter?—If the ship which was navigated into a port of safety was in a disabled state, the service would be one of salvage. Our correspondent should prefer his claim before Justices of the Peace, or in the County Court, and a reasonable remuneration would then be awarded.

Tug Service.—I engaged the services of a steamtug, and made a verbal agreement with the master of her to tow my vessel, from where she was at anchor, to the coal hulk, at the same time telling him how much chain we had out. The steamtug was about two hours and a half from the time she left her anchorage till she was clear of my ship. The cause of detention was that my anchor having hooked a lost chain and anchor which we had to weigh and then slip, the master of the steamtug did not tell me at the time that he was to charge extra, and I was not aware of it till the account was presented, which was exactly double. No time was specified when the agreement was made, but I was told afterwards that twenty minutes was quite sufficient for the the tug's services. Fifteen dollars was the agreement, which, when doubled, amounts to something like £6 5s. sterling.—If the employment of the tug was extended from what should have been a service of twenty minutes to one of two hours and a half, through the anchor hanging with sufficient chain attached thereto to catch any submerged object, extra compensation would be due.

Ships' Lights.—Is it legal for a surveyor, after examining a vessel for lights and fog signals twice, and reporting the regulations complete, to come the third time and condemn the burners of the lamps, and order the stanchions to be lengthened, also to charge 6s. 8d. railway expenses for the distance of seven miles? The ship had no certificate previous to this.—If the surveyor gave a certificate that the regulations were duly

complied with in the fixing of the lanterns and the size of screens, burners, and lenses, and then paid a third visit and ordered alterations to be made, the facts should be represented to the Board of Trade. A surveyor can legally charge for travelling expenses.

My vessel, at present at Falmouth for orders, was boarded by the Board of Trade surveyor on Tuesday, who demanded to see my side-lamps, which where shown him. The lamps are regulation size, but it appears the burners are $1\frac{1}{2}$-inch, whereas it is stated they should be $1\frac{3}{4}$-inch. Yesterday I received a letter from that gentleman requesting me to make the alterations, and charging me 6s. 1d.—that is, 6s. for boat hire and 1d. postage—and informing me unless the alteration is made, and three days' notice given him, my vessel will not be allowed to proceed. Can he legally charge me this 6s. 1d., and detain my vessel?—Board of Trade surveyors are empowered to board any British ship in port, and to examine the lighting apparatus, and also to detain vessels till the conditions of the law are complied with.

Stevedore's Liability.—When a stevedore undertakes to stow a cargo, to be stowed in different holds of a ship, would he be liable in the event of any mishap to the ship at sea caused through defective stowage in the part of the ship where he (the stevedore) did not stow, but when stowed by incompetent persons?—If a stevedore contracts to stow an entire cargo, and permits incompetent persons to perform a part of the work, he would be liable. On the other hand, if the merchant shipowner, or master superseded the stevedore and engaged men to stow one part of the cargo, and on the voyage that badly stowed cargo got adrift, and caused a mishap to the ship at sea, the stevedore who contracted to load the entire ship would not be liable for any damages incurred.

Salvage of Anchors and Chains.—Having picked up an anchor and chain and landed it here, and duly reported the same to the receiver's deputy, will you kindly inform me:—1st. Am I bound to deliver up to the receiver or agent at the uniform rate of £2 per ton for anchor and chain? 2nd. Or in case the owner or agent of the vessel to which the anchor and chain belong claim the same, can the salvor let the owner or agent have them by paying the valuation agreed upon between them, after paying the receiver's commission, the Board of Trade, and other fees? 3rd. When anchors and chains are not claimed, is there any stated time for them to lay before been sold by auction for the benefit of the salvors and all concerned?—1st. A person who picks up anchors and chains, not being the owner, is bound to deliver the same to the receiver of wreck, irrespective of the amount of salvage payable thereon. 2nd. Unless a person is employed by the owner of property to recover the same, the person who salves it must hand it over to the receiver of wreck; and the salvor cannot legally deliver anchors and chains to

claimants under the conditions stated. 3rd. Wrecked property must be sold at the end of one year after the Receiver obtains possession. The Board of Trade may authorise payment as salvage before that period expires; but if a salvor is dissatisfied with the award of £2 per ton he can apply to the Board.

SALVAGE SERVICE.—On the 2nd inst. a brig disabled came to anchor in a bay and hoisted signals wishing for communication with the shore. Notwithstanding it was blowing a gale of wind at the time, four men volunteered to go with the pilot, whom they put on board. The master told one of the boatmen to procure a tugboat as early as possible, by telegram or in any other manner. The boatman, in obedience to the instructions received, engaged a tugboat, which on the following morning proceeded to the brig and brought her safely into harbour. When these men, who had ventured out at great risk of their lives, applied to the master of the vessel for some remuneration, they were told by him that he would not give them a farthing. Ought not these men, after what they did for the master and for his vessel, to receive some acknowledgment for their services; and seeing that such acknowledgment was refused by the master, can they establish any claim in a court of justice?—If a vessel is in probable peril, although she afterwards escapes without danger, that constitutes the assistance rendered a salvage service. (The *Westminster*, Admiralty Court, Nov. 4 and 5, 1845.) But salvors are bound to prove that the vessel was in danger, which is the very foundation of their claim to salvage. (The *Wilhelmine*, Admiralty Court, March 2, 1842.) A messenger may be a salvor. The crew of a pilot-cutter, not being able themselves to render effective assistance, and to save a derelict vessel, went in search of a steamer, which rendered the necessary service, and the pilots were held entitled to salvage. (The *Carrier Pigeon*, Irish Admiralty Court, 1859.) A pilot also is entitled to salvage if he renders assistance to a ship in distress. (The *Liberty*, Admiralty Court, April 19, 1850.) Where risk of life is incurred by salvors, this enhances the reward which is given to them. (The *Mary*, Admiralty Court, March 12, 1841, and the *Clarissa*, Admiralty Cinque Ports, August 2, 1855.) Towage of a vessel which is in distress is a salvage service. (The *Railway v.* the *Charles Adolphe*, Admiralty Court, November 5, 1856.) A vessel, disabled, and would not work, was boarded by the crew of a fishing smack, who went to Harwich, and there procured a steamer to tow the distressed ship into port. This was held to be a salvage service, and an award of £40 was made. (The *Ocean*, April 19, 1848.) But where a vessel was in danger of taking a wrong course, and assisted clear of the sands near Winterton by a boat's crew of four men, and thence into Yarmouth, this was held mere pilotage, and not salvage, and the salvors, who declined an offer of £35,

were condemned in costs for instituting an action in a superior court. (The *Soegutton*, June 29, 1844.) On the other hand, a vessel, when within fifteen miles of the Galloper, with rudder damaged, five boatmen conducted her within six miles of Dover, whence a steamer was engaged to tow her to Ramsgate; and this was held to be a salvage service. An award of £210 was made on the value of the property, estimated at £2,440. (The *Elizabeth Holderness*, April, 29, 1846.) Deal boatmen, rendering salvage services in stormy weather, are entitled to the favourable consideration of the Court, keeping in view the propriety of giving such an amount of salvage as will encourage salvors to keep upon the coast proper boats and competent crews, to enable them to render efficient aid to ships in distress in that locality; and a tender of £50 for bringing a ship into a place of safety held to be inadequate under the circumstances. The sum of £120 was awarded. (The *Boxer*, Jan. 26, 1859.) A ship and cargo value £3,248, touched the Brake Sand, and the luggers *Champion* and *Fawn* went to her assistance. One boat's crew remained on board, and the other went for a tug, which towed her to Ramsgate in tempestuous weather. The service was considered by the Court meritorious, but the sum tendered, £222, was held sufficient, including alleged damage to luggers. (The *Mary Lyon*, Aug. 4, 1859.) From the cases here quoted, all of which will be found reported in the *Shipping and Mercantile Gazette* and many others to the same purport which might be given, we are of opinion that if the boatmen were employed by the master of the vessel, and which vessel was in a disabled state, in stormy weather to procure the services of a tug, and they acted as messengers in procuring a steamer, and thereby saving the ship and the lives of those on board from imminent or probable danger, they are entitled to remuneration for their services. We, therefore, recommend our correspondents to make an application to the local justices or to the County Court for salvage.

MR. PLIMSOLL'S ACCUSATIONS.—Mr. Plimsoll is no less severe on the Board of Trade, than he is on shipowners. He says that there is a gentleman in the Board of Trade who could, long ago, had he been so minded, have extended to sailors the protection they need. We wish he would state plainly who this gentleman is. Mr. Plimsoll does not know how often the Board of Trade would have been abolished, had certain shipowners and shipbuilders had their way. He, however, puts the shipowners and the Marine Department of the Board together as co-delinquents, and puts them both on their trial. This is, probably, fortunate for the shipowners. It is possible that the Board of Trade may yet be sufficiently honest and strong to stand between Mr. Plimsoll and the other objects of his misrepresentations.

GENERAL.

ADMIRALTY RULE.*

A DEFENCE of the rule of the Admiralty Court in cases of collision between ships, has just published in a letter to the Right Honourable Lord Selborne, by H. C. Rothery, M.A., the learned Registrar of the High Court of Admiralty and of Appeals. After an introductory paragraph the learned Registrar says:—

"Your lordship, on bringing in your Bill for the reform of Judicature, is reported in the *Times* of 14th ultimo to have expressed yourself as follows:—

"In respect of collisions at sea, it is proposed to do away with a rule which now holds good in the Court of Admiralty, and to adopt in its stead the rule of Common Law, as being more applicable to the general principle of contributory fraud or contributory negligence. The rule of law is, that if the plaintiff is in the wrong he cannot recover from the defendant, and if the defendant is in the wrong he cannot recover from the plaintiff. But what the Court of Admiralty does is this: If two ships run into each other, and both go to the bottom, as I understand the practice, the Court of Admiralty adds the value of both ships, and then divides the total between the two parties; so that if I were the owner of a ship worth only £10,000 and one of your lordships was the owner of one worth £50,000, you see how well I should fare in comparison with the owner of the better ship if both vessels went down after a collision."

The expression which your lordship is reported to have made use of, that the "Court of Admiralty *adds* the value of both ships together and then *divides* the total between the two parties," has, I find, led to some misapprehension as to what really is the Law of the Admiralty on the point. It has been thought that your lordship's meaning was that, if two vessels come together, the one worth £10,000, and the other worth £50,000, and both go to the bottom, both being to blame, the values of the two ships are *added* together, making £60,000, and that this sum is then *divided* between the two; so that the owner of the vessel, which was worth £10,000 only, might thus receive a compensation of £30,000. I do not for one moment think that your lordship entertained that opinion, or that your intention was to convey and such impression; but I find that not laymen only but even lawyers of some standing, to whom the principles of Admiralty Law are not very familiar, have thought that this was the Law of the Court of Admiralty. And it must be admitted

* London: Longmans, Green, Reader, and Dyer.

that your lordship's words would seem to imply that it is the owner of the worse vessel, who would benefit most under the Admiralty Rule. I propose therefore to explain clearly what the Admiralty Rule is, and in what respect it differs from the Common Law Rule.

I will take your lordship's figures, and will assume that A and B are the owners of two vessels, worth respectively £10,000 and £50,000; that they come into collision, and that both alike are to be blame for the collision—that being a condition precedent to the equal division of the damages.

And, first, I will assume that A's vessel goes to the bottom, and that B's is uninjured—a not very unusual occurence in collisions at sea. Then A, who has lost £10,000 by the sinking of his vessel, would under the Admiralty Rule, both being to blame, be entitled to recover one half of his loss, or £5,000, from B.

Secondly, let us assume that B's vessel goes to the bottom, and that A's is uninjured; then B, who has lost £50,000 by the sinking of his vessel, would be entitled to recover one moiety of his loss; or £25,000, from A.

Thirdly, I will suppose that both go to the bottom, both alike being to blame for the collision. Then A, having lost £10,000 by the sinking of his vessel, is entitled to receive £5,000 from B for a moiety of his damage; whilst B is entitled to recover £25,000 from A for a moiety of his damage. Each loses £30,000; A by having to bear the loss of one moiety of his own vessel, or £5,000, and by having to pay to B £25,000 for the moiety of his (B's) loss; and B by having to bear the loss of one moiety of his own vessel, or £25,000, and by having to pay to A £5,000 for a moiety of his (A's) loss. The mistake of those, who think that the owner of a vessel worth £10,000 might, by a collision with a vessel worth £50,000, receive under the Admiralty Law no less a sum than £30,000 as a compensation, arises from their supposing that the amount at stake is a common *fund* to be *divided* between two claimants, not a joint *loss* which has to be *apportioned* between them.

Let us now see what the result would be under the Common Law Rule, where, if both are to blame, neither can recover anything. In the first of the three cases cited above, the whole loss of £10,000 would fall upon A; in the second, the whole loss of £50,000 would fall upon B; and in the third case, B's loss would be £50,000, whilst A's loss would be only £10,000, or one-fifth part that of B. And this too, be it observed, although both may have been equally to blame for the collision, and although the fact whether one or both went to the bottom would depend very much upon the accident of which parts of the two vessels came into collision. A rule which depends upon so mere an accident can, I venture to submit, hardly be so equitable, as the rule which directs

that a loss resulting from the common fault of two parties shall be equally divided between them."

After this follows two most interesting chapters on the origin and history of the Admiralty Rule, and reasons for and against it. The whole subject is treated in a clear, able, and judgmatical manner, and concludes in favour of the Admiralty Rule, a conclusion in which we cordially concur as the most salutory for shipping interests. We cannot too strongly recommend this pamphlet to our readers, and trust that the shipping interest will co-operate with a view to preventing any departure from the existing sensible, and well known rule.

INSPECTION OF EMIGRANT SHIPS.

(COMMUNICATED.)

To those experienced in the actual process of emigration, the evils of the present system of shipping emigrants in some ports must be only too well known to need exposition. And it is scarcely possible to convey any idea of the facts to those who have not been eye-witnesses to the scene of confusion on board an emigrant vessel for many days after the embarkation. In the first place, the ship is often not really in a fit condition to receive the people who arrive—perhaps two hundred or more—on a stated day, tired, hungry, and worn out. They have positively no abiding place, and their ignorance of the surrounding difficulties only renders them the more helpless. Workmen and labourers of all descriptions are hurrying about finishing in a necessarily imperfect manner the remainder of fittings, &c. In the midst of this, cargo is being shipped; and, under these circumstances, it is a matter of sheer impossibility to reduce things to order. Frequently provisions are not at hand, and there are no arrangements as to meals. Cooking apparatus and utensils, from long disuse, or from being of new iron, are not fit for immediate use, and for several days the food cooked is in reality spoiled, and is often quite uneatable. All this happens over and over again, although it may be in strict violation of the laws. We are not now speaking of regular lines of emigrant ships of well-known Liverpool and other lines, but of sailing ships and what may be called "irregular" steamers. Emigrants should not be permitted to embark before it has been declared by an inspector appointed for the purpose that the ship is in all respects in readiness to receive them; and in the event of fresh provisions not being on board, which is not an unfrequent occurrence in the cases we refer to, their subsistence money should at once be paid, as many of these people may be absolutely without means. All ships should in the first place be surveyed, if starting from London, by two surveyors, to prevent

any contention that may arise. Demands for final survey should not be made until all equipments are complete, for as surveyors are required to sign as to the entire seaworthiness of the vessel, no opportunity should be denied to them to see that all their recommendations have been thoroughly carried out. It is a fact that emigration officers sometimes give a certificate in faith that all will be right; and it is also a fact that only recently a ship under these circumstances left the Thames without proper provisions, and in absolute defiance of the law. Depth of hold should always be taken at first survey, as it is of great importance that the question of clear side should be decided at any future survey without a doubt. The Board of Trade are pretty smart, but they don't yet know how often the Act is evaded, and how much is still done on trust and in the face of positive enactment to the contrary. It is to be hoped that attention may be directed to the subject.

INMAN LINE.

Our illustration for this month represents one of the Inman Line of steamers just leaving the Mersey for New York. These vessels are full-rigged ships, and have the appearance of most beautiful yachts. There are fourteen steamers and three lighters belonging to the line. The steamers all bear the prefix of "City." The names and gross and net tonnage are as follows:—*City of Richmond*, 4,500, 3,000; *Chester*, 4,500, 3,000; *Antwerp*, 2,891, 1,626; *Baltimore*, 2,867, 1,774; *Bristol*, 2,610, 1,775; *Brooklyn*, 2,911, 1,980; *Brussels*, 3,746, 2,322; *Durham*, 697, 538; *Limerick*, 2,536, 1,724; *London*, 2,765, 1,880; *Montreal*, 4,451, 3,027; *New York*, 3,499, 2,880; *Paris*, 3,081, 1,975; *Washington*, 2,807, 1,909; *Ajax*, lighter, 163, 183; *Bosphorus*, lighter, 448, 333; *Hercules*, lighter, 211, 174; fourteen steamers and three lighters, total tonnage, 43,683, 29,550. A new steamer, superior to any of the others, is now being built. The total number of passengers carried since line began, December, 1850 to 14th March, 1873, is 761,060, a nation in itself. Fastest passages—*City of Paris*, *outwards*, November, 21st, 1867, to November 29th, 1867, eight days, four hours, and one minute, mean time. *Brussels*, *inwards*, December 4th, 1859, to December, 12th, 1869, seven days, twenty-two hours, and three minutes mean time.

ROYAL NAVAL RESERVE.

It is with very great satisfaction that we announce that the regulations have been revised. It was a matter of general observation that until lately the regulations were drawn apparently for the express purpose of keeping men out of the Reserve. The Royal Commission of 1859 recom-

mended that 80,000 men should be enrolled from the Merchant Service, but hitherto such have been the stringent character of the regulations that not more than half that number have been obtained, and the enrolments are steadily decreasing. Mr. Goschen has now, however, made a move, whether it is successful will depend on the manner in which the revised regulations are carried out. If the delay takes place in filling up the drill stations promised, and men are to be sent from their homes to inconvenient places and for long distances, the new regulations had better be burnt at once. If on the contrary the convenience of the men is at all studied, we hope to see a great and rapid increase in the Reserve. The chief feature of the new regulations is that they contain liberal regulations for the formation of a second-class Reserve. The whole Naval Reserve is henceforth to consist of two classes, a first-class and a second-class, the first, or old Reserve, to comprise only able seamen of specified ages and qualification, and the second-class to include seafaring men generally, who will be allowed the privilege of being promoted to the first-class when fit. In either first or second-class the applicant must be a British subject, able to speak and understand the English language, free from physical defect, and in health, character and every other respect, specially eligible. The limit of age for the first-class Reserve is not above 30, except in the case of men who have been discharged from the Royal Navy as able seamen with good characters, who will be enrolled, if otherwise qualified, up to 35. For the second-class the limits of age are not under 19 nor above 30. The standard of height is 5 ft. 4 in.; but if a candidate be in other respects eligible, this rule will to some extent be relaxed. Applicants for the first-class must prove at least five years of service at sea within the last ten years, one year at least to have been spent in foreign-going or regular coasting vessels. Applicants for the second-class must show that for three years they have followed a seafaring life, either in foreign-going, coasting, fishing, or other vessels, and of these three years' service, six months' service at least as ordinary seaman; and every applicant must prove that he has been at sea within the four months prior to his making application for enrolment, and must declare that it his intention to follow the sea service for a period of at least five years. The action of former Boards of Admiralty has thrown cold water on the Reserves, and has rendered almost nugatory any plan for the formation of a second-class Reserve, chiefly by denying the members reasonable facilities for drill. Under these new regulations, however, while applicants for the Reserve may be received, passed, and enrolled at almost every port in the United Kingdom, ships and batteries, where both first and second-class men may take their drill, will be provided at forty-four ports, namely, thirty-one in England and Wales, six in Scotland, and

seven in Ireland. The period of drill annually required of each Reserve man, twenty-eight days, may now be taken in a manner which will suit the convenience of almost every seafaring man. The retainer for first-class men will be £6 per annum, as heretofore, and for second-class men £2 10s., with a grant annually of a suit of uniform, the payments of the retainers to be made quarterly on the 1st of January, 1st of April, 1st of July, and 1st of October in each year. The men of the Naval Reserve are liable to serve in the fleet *only*, when called out by Royal proclamation, and it is not contemplated calling out this force except when an emergency, such as a threatened invasion, requires a sudden increase in the naval forces of the country. The engagement of a naval Reserve man to the State is for five years. At the expiration of that time he is entitled to his discharge if he desire it, or he may obtain his discharge, before the expiration of his term of service, by passing an examination for master or mate, or by purchase. The pensions may begin after a service of fifteen or of twenty years, according as the claimant has joined the Reserve when under, or over, thirty years of age; and there is an important provision by which "trained men" of the first-class Reserve become eligible for the coastguard service, but under conditions as to age, pay, pension, &c., which are fully set forth in this part of the regulations.

Antarctic Exploration.—In view of the approaching transit of Venus next year, it is to be regretted that Antarctic exploration has been so neglected that we shall not be able to have an observing station farther south than Kerguelen Land. Of course, little will be done in this direction by the *Challenger*; for she is only to approach the Great Southern ice-barrier opposite the centre of the Indian Ocean, as near as is consistent with convenience and safety; and, moreover, scientific investigations, rather than geographical discovery, form the chief object of the expedition. Even were the case different, there would not be sufficient time to organise a party to observe the transit from a high southern latitude in accordance with any recommendations or suggestions which might be made by the *Challenger* party. It is by no means creditable to us as a nation, which aspires to take the lead both in astronomical and nautical matters, that on such an important occasion as this of the transit of Venus, we should be unable to plant an observer farther south than on an island which is occasionally sighted by outward bound Australian traders. Of course the wider apart the observing stations on the earth's surface, the longer the base line, and consequently the more accurate the determination of the sun's distance. But the fact is, we believe, that no steps were taken to secure an observing station in a higher southern latitude in consequence of an erroneous statement which was made some

years ago to the effect, that, owing to certain effects dependent on the earth's rotation, it would be useless to visit the Antarctic regions for the purpose of observation in 1874, and that such an expedition ought to be deferred till the transit of 1882. Now, when it is too late, it turns out that matters are just the reverse; excellent observations might be had next year, but only indifferent ones can be looked for in 1882. As regards the actual distribution of land and water around the south pole, a recent writer judiciously observes that it is singular how confidently geographers have spoken of the great Antarctic Continent when only an inconsiderable extent of coast line has ever been seen, except at the highest point attained by Ross; and there is really not the slightest evidence for assuming that Sabine Land, Victoria Land, and Graham Land form portions of one and the same mass of land. Moreover, it must be remembered that it is by no means certain that such of the coast line as appears in our charts is correctly laid down; for at one part where Wilkes marked land, Ross found an open sea, across which he sailed. Considerable support has undoubtedly been given to the theory of an Antarctic Continent by the opinion of the late Captain Maury, who defended this view on the ground of his belief in a North Polar sea, and in what he termed "a physical necessity" that land should not be antipoded to land. But it must be remembered in the first place that the existence of a North Polar sea has not yet been fully established, and even if it were, and even if we admit the "physical necessity"—which is certainly true, as a matter of fact, to a remarkable extent—the assumption of an Antarctic continent is, after all, an illogical deduction from these premises. For it by no means follows because land is always antipodal to water, that water must be always antipodal to land. On the contrary, the ocean occupies so large a proportion of the earth's surface, and the land is distributed in such a way that water is often antipodal to water. There are indeed reasons for believing that the Antarctic as well as the Arctic regions are occupied by an archipelago. At all events, it is to be hoped that, ere long, we may see a vessel sent out to explore the South Polar regions. Nevertheless, we are scarcely prepared to advocate such an expedition on the ground which some do—namely, that an Antarctic is less perilous than an Arctic voyage. It is, we believe, indeed true that no exploring ship has ever been lost in the South Polar regions; but then is not that in a great measure owing to the fact that comparatively so few have ever essayed the perils of those latitudes?

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might have had influence with the Commissioners. It was entirely through inadvertence that the offensive passage was left in the manuscript, and we now, first, withdraw it, absolutely, and, secondly, apologise for it, most fully, to any and every person whom it has vexed or offended, or who might think himself aggrieved by it. We can the more readily and cheerfully withdraw the offensive and indiscreet passage to which we refer, because we never intended it to bear any personal allusion whatever. The question of towage rates on the Tyne is too big a question, and too important a question, for personalities and insinuations. In withdrawing those of our remarks which we think are fairly objected to, we do not however abate one jot from the main point we then advanced, that there are too many tugs on the Tyne, that the demand for increased rates is utterly uncalled for, and that any such concession to the tug owners is the bolstering up of a rotten system. The following copy of a letter has been forwarded to us, which shows that our views as first advanced, and the views of the Commissioner as now advanced are in remarkable accord :—"Board of Trade (Harbour Department), Whitehall Gardens, S.W., 15th March, 1878.—Sir,—The Board of Trade have had under their consideration the report of the officer who recently held an enquiry at Newcastle upon the subject of the proposed further increase in the towage rates on the River Tyne, and they have decided not to renew the temporary sanction which was given under the circumstances stated in my letter to you of the 17th ultimo, and which will expire on Monday next, the 17th instant, at midnight. A copy of Captain Wilson's report will be sent to you as soon as practicable.—I am, &c., (Signed) C. Cecil Trevor."

Safety-Valves, Screw Shafts :—Abstract of Swedish Law.—"To ascertain the construction and loading of the inaccessible safety-valves, the engines, after at least half an hour's steaming full speed, with bright burning fires, must, on command of the surveyor without notice be stopped, and steam allowed to generate, with safety-valves acting free, and all other steam channels shut, where steam may escape and without altering the draught, until it is ascertained that steam cannot rise over the highest pressure allowed." "To ascertain the strength of the machinery, after the highest pressure of steam is thus attained, the engines must be started at *full speed, and at once be reversed at full speed as abrupt as possible, which manœuvre may be repeated two or three times.*" In a recent case coming within our own knowledge the safety-valves were loaded to 65lb., and were of the full dimensions passed by a Board of Trade Surveyor, and yet the steam increased to 80lb. in a few minutes on a sudden stoppage of the engines. This does not say much for the theory that safety-valves are now too large.

ADMIRALTY CONTRACTS.—The Secretary of the Admiralty desires to direct attention to the following letter, which has been widely circulated among persons likely to tender for Admiralty contracts. The names appended to the circular are, the Secretary states, quite unknown at the Admiralty, and it is beyond the power of the writers or of any other persons to influence the decision upon tenders for clothing to be received on the 5th of March, or other tenders. The tenders sent in answer to advertisements are, it is stated, adjudicated upon by the highest authority, and there is no occasion for the employment of agents by manufacturers:—"Gentlemen—Having made Government and other contracts one of our leading features, we shall be glad to enter into arrangements with you to further any tenders you may be disposed to submit, and when accepted to superintend the passing and completion of the same. Possessing, as we do, undoubted facilities, and being fully acquainted with every branch of this particular business, we feel convinced that we can materially forward your interests in this respect. We are now acting for several large firms very successfully, and to whom we shall be glad to refer you as to our position and capability. Should you entertain our overtures we shall be glad to enter more fully into particulars or wait upon you personally. Awaiting the favour of your reply, we are, yours faithfully."

THE ADMIRALTY AND THE PRINCE OF WALES.—The Lords of the Admiralty have issued a circular which will prevent for the future any such misunderstanding as that which formed the topic of so much gossip in the service last year. It is thus worded:—My Lords Commissioners of the Admiralty desired that it be understood that, whenever Her Majesty the Queen is on board her Royal yacht, or any of Her Majesty's ships, with her standard flying; or when His Royal Highness the Prince of Wales is representing Her Majesty at any special ceremonial, and is on board one of the Royal yachts or any of Her Majesty's ships, with his standard flying, the regulation for firing the morning and evening gun is to be adhered to on board any of Her Majesty's ships and vessels present, but the time is to be taken from the gun which will be fired from the Royal yacht or ship bearing Her Majesty's standard or that of his Royal Highness the Prince of Wales." The hoisting and hauling down of colours in the morning and evening are to be regulated by the same rule.

A CHINESE TRAINING SHIP.—The sailing corvette *Kien Weï* has been recently attached as a training ship for cadets to the naval school at Foo Choo, which was founded some years ago by the Chinese Government, on a plan suggested by Lieutenant Gicquel, the Director of the Arsenal. The *Kien Weï* is an old German merchant ship—the *Matador*, of Hamburg—which being blockaded in the port of Foo Choo during

the late Franco-German war, was sold by her captain to the Chinese Government, who have since equipped her for the purpose just indicated. She carries five guns—four English rifled 80-pounders of four inches calibre on the broadside, and a 62-pounder rifled Krupp gun of six inches calibre amidships. She was at first commanded by a lieutenant in the British Navy, but he withdrew in consequence of some misunderstanding with the Chinese officials, and a captain in the English Mercantile Marine was temporarily appointed, pending the selection of another English naval officer. A gunner and a boatswain, who have served in our Navy, complete the staff of Europeans on board the *Kien Wei*. The chief Chinese official is a mandarin of the fifth class. His especial duty is to make all needful arrangements with the authorities at the various ports visited by the training ship, and, generally speaking, to exercise a certain amount of control over the captain, and act as a medium of communication between him and the Chinese Government. From the nature of the position occupied by this functionary, it is easy to see how difficulties, such as have already taken place, may continually arise between him and the English captain. The Chinese officers and crew number altogether ninety-five. There are thirty pupils on board, who are classed as cadets and midshipmen. The course of training is as follows :—The candidates for commissions in the Chinese Navy are, in the first instance, obliged to pass an examination for admission into the academy on shore, at Foo Choo. Many of those who present themselves have already spent some time in the English schools at Hong Kong and Singapore, and all can read and write our language. They belong, for the most part, to the upper classes, and many of them are the sons of high officials of the Empire. Entering the establishment at Foo Choo, at the age of seventeen or eighteen, they remain altogether five years in the naval school and on board the training ship—three years as cadets and two as midshipmen. The course of instruction on shore is chiefly theoretical; that on board the *Kien Wei* is almost entirely practical, and comprises actual navigation of the ship from port to port, seamanship, tactics, and gunnery. Considerable attention is also paid to infantry drill, with the view of rendering the cadets fit to act as marine officers, and in this department of their drill they are taught sword exercise and the use of the Remington rifle, with which the best of the Chinese troops are for the most part armed. The Government, it is said, have resolved that none but English instructors are to be appointed. At the expiration of their five years' training, the midshipmen are at once posted as officers on board ships of war, but the system has been such a short time in operation that we understand only one batch of six midshipmen has as yet passed into the Navy after going through the full curriculum.

UNSEAWORTHY SHIPS.—The Board of Trade are, we are glad to see, working gradually in putting into force Mr. Chichester Fortescue's Act of 1871, as to the declaring of ships to be unseaworthy. At the present moment the *Huntress* and the *Eleanor* are both declared to be unseaworthy, and are confined at Cardiff. The *Parga* also raises a question in London. Mr. Plimsoll is the official informant in the latter case, and the owners have appealed to the City of London Court.

HER MAJESTY'S SHIP "RALEIGH."—This vessel, just completed under the supervision of Captain Chamberlain, R.N., has been launched at Chatham. The *Raleigh*, unlike most of the men-of-war lately constructed, which have been built with the view chiefly of resisting the power of shot and shell, is intended to combine great speed with a very heavy armament. She is built of iron, sheathed with wood, and coppered, and lined with brown cardboard, as being less likely to splinter, and also being less inflammable than wood. Her dimensions are:—Length, 298 feet; breadth, 48 feet 6 inches; draught of water forward, 20 feet; aft, 23 feet; tonnage, 8,210 tons; armament, upper deck, two 12½-ton guns, four 64 pounder guns; main deck, fourteen 90-cwt. guns, two 64-pounder guns; horse-power, 800; crew, 530; and she is estimated to cost, when entirely finished, about £200,000.

DEEP SEA SOUNDINGS.—In answer to our correspondent, "Able Seaman," we have to tell him he is quite right when he says the sea is in some places more than five miles deep. Thus, although the depth of the ocean is still very imperfectly known, owing to the inadequacy of the means hitherto employed for sounding, we are told that Ellis found the depth of Hudson's Bay to be 891 fathoms; and that Scoresby found a depth, between Spitzbergen and Greenland, of 1,200 fathoms. These depths, however, are far exceeded by more recent measurements, which have been taken with very great care. In lat. 15° 8′ S., long. 23° 14′ W., Sir James Ross found a depth of 4,600 fathoms; and in lat. 86° 49′ S., long. 37° 6′ W., Captain Denham obtained by soundings the enormous depth of 7,706 fathoms, 46,236 feet, exceeding by above 17,000 feet the height of Mount Everest, the loftiest of the Himalayas. The difference between the highest point of the earth's surface and the lowest depth of the ocean, as hitherto ascertained, is therefore about fourteen statute miles.

IN recording the death of Commander Edward Dunsterville, R.N., which took place at Camden Town on the 11th inst., in his 77th year, it is our duty to remind our readers that this gentleman served for upwards of a quarter of a century as a naval assistant to the Hydrographer of the Admiralty, and during that time furnished much information to this Magazine; he was also the Editor of several editions of Horsburgh's East India Directory, and of the Light Lists of the world, published by the Admiralty. A faithful and zealous public servant.

MARRIAGE OF THE DUKE OF EDINBURGH.—The first intimation of this interesting event is given in *Aris's Birmingham Gazette*, as follows:—"It is stated in well-informed circles that the preliminaries of a marriage contract have been arranged between His Royal Highness the Duke of Edinburgh and Her Imperial Highness the Grand Duchess Maria Alexandrovna, only daughter of the Emperor of Russia. It is also understood that Mr. Gladstone will have an interview with the Duke of Edinburgh in a short time, presumably with a view to finding the amount to be vote by Parliament on the occasion of the marriage.

SHIP'S SIDE LANTERNS.—There seems to be at present some dissatisfaction among the captains in the German Mercantile Marine at being required to provide themselves when in English ports with side lanterns of the pattern prescribed in the Board of Trade circular of 21st June, 1871. A German imperial edict, dated 23rd December, 1871, laid down the dimensions, &c., of the lanterns to be used on board merchant vessels, and these regulations were prepared with the view of securing uniformity with the arrangements adopted by ourselves and other civilised nations. But from a variety of causes it appears that lanterns, the construction of which does not conform to the prescribed rules, have crept into use on board German vessels. The *Hansa*, commenting upon this subject, refers to the numerous recent collisions on the English coast, and complains that a German ship, with non-regulation lanterns, has, on that account, in the event of being involved in a collision, to run the risk of an adverse decision in an English court, although regarded by themselves her lights may have been of a first-rate description. Foreign ships are usually notorious for their economy of lamp-oil, but at least they ought not to grumble at having to provide themselves with proper lanterns.

ORIGINAL PROBLEM FOR NAVIGATORS.

A steamer was ordered on a "trial trip," the commander of which received the following instructions:—From a certain point indicated steer head to wind for ten hours; then bring the wind three points on the port quarter, and, keeping it in that direction, steer for eight hours. Then bring the wind four points on the starboard bow, and steer so as to keep the wind in that direction for six hours; at the end of which time it was found that the vessel had arrived at the point indicated from which she started, and that she had made during the twenty-four hours three hundred and thirty-five (335) miles; and the wind having been *steady from one quarter during the whole of the time*, she was enabled to run that distance on three courses only. It is required to prove, by direct solution, the distance she made on each course? NEARCHUS.

THE

NAUTICAL MAGAZINE.

NEW SERIES.

MAY, 1878.

COMMON SENSE.—AN APPEAL.

It would seem that the small shipowner and the "hardy tar" are to become extinct. Merchant seamen will soon not be allowed to go to sea for fear of being illtreated, or made uncomfortable, or jeopardised. Already the food of the sailor is the subject of statutory enactment, as also are his sleeping accommodation, lime and lemon-juice, the medicine, conduct afloat, the lights, the anchors and cables, the wages account: and, to make the thing quite complete, the ship herself must be approved, and the loading and stowing of the cargo must be directed by the State, and superintended by Government officials. Every ship, except classed ships, must be surveyed in dry dock once a year, and on every voyage made by every ship her draft of water must be taken when she is fully loaded, and a load-line or white patch is to be marked on her. This is all proposed to be brought about for all ships by an association of enthusiasts, whose statement, as far as we can understand it, is absolutely against record—viz., that more than half the loss of life at sea, on and near our coasts, happens through the overloading and unseaworthiness of colliers and other coasters.

It is now a misdemeanour to send an unseaworthy ship to sea, and the owner is deemed to be in fault unless he can prove that he did all in his power to make and *to keep* the ship seaworthy. Sailors can now with impunity leave their ship if they honestly believe her to be unseaworthy and complain before leaving her, and can now

call in a Board of Trade surveyor to support their allegations. The Board of Trade can now condemn a rotten or unseaworthy ship, and absolutely can and do prevent her from leaving port. This is as it should be; but alarmists want to go further. They say that a sailor is not to go to sea in an unclassed ship unless she is surveyed annually by Government. They do not in this proposal see the grim fact that new-classed iron steam ships are lost just as much as new-unclassed iron steam ships. Nor do they recognise the facts so ably pointed out in a contemporary by a sailor, who is a master mariner of thirty years' standing, that there are many vessels of great age and battered appearance fully capable of earning the livelihood of numerous families without more than ordinary risk of life, and that in many cases the noble-looking amongst ships are more dangerous to the seaman than the vilest-looking old tubs. Alarmists and riders of the inspection and classification theory also altogether overlook the fact that classed ships are also lost in remarkable numbers just before the class expires. However, if a ship is not classed, they say it must be ascertained by survey in future that she comes up to a certain standard of excellence (*? excellence*—seeing that new and classed iron steamers go down as quickly as old unclassed ships), and is guaranteed for twelve months, and is loaded according to some fantastic rule of load-line, before the seaman is to be allowed to jeopardise his honest and sober self, and his valuable life in her. Never mind about the British ships in the British coasting trade; stop them. The effect of interference is already apparent. A British ship condemned as unseaworthy was immediately sold to foreign owners, and sailed away with British seamen under the foreign flag. The railways can carry coals and do the trade now done by coasting vessels, and the railways will not, at any rate, jeopardise British seamen's lives. Let the trade, therefore, be driven to the railways or to foreign ships, and out of our ships. The draft of water of all ships must, such is the proposal, be taken accurately and no ship loaded below a certain point is, under any circumstances, to go to sea. No British ship will therefore be able to leave port at night or in rough weather, for then the draft of water cannot be accurately ascertained. If few shipowners are rogues, all shipowners are to be put under a galling surveillance. A shipowner who is a rogue, and who deliberately wants to lose a ship to make money of her, is not debarred from dealing with a good ship. (See the case of the *Severn*.) He will deal with a classed or a surveyed ship, because he will have a better haul, and will have "an army of surveyors" to back him up as to her seaworthiness. The nursery of our seamen, our coasting trade, and, to be logical, our fisheries, is to be annihilated, because half the "casualties," losses of topsails, &c., happen in the coasting trade,

and on the further allegation that half the *life* lost on and near our coasts is lost in coasters on account of unseaworthiness. The latter ground has no foundation in fact. It is of no use for quiet well informed people to point out that wherever great loss of life happens at sea, it does as a matter of fact happen in ships that are now inspected in port, and from causes that no inspection in port can in any way control. Alarmists will not be silenced, and will still cry out "lives are lost at sea," and *therefore* "ships ought to be inspected in port." Some ships are rotten! Agreed, break them up under the existing law, unless sailors wish to go to sea in them; but don't therefore compel every shipowner to lay up his vessel in dry dock once a year to be opened cut for inspection. Some ships are overloaded! Agreed, have the cargo taken out, but don't disfigure and delay all other ships in consequence. Some seamen go on board drunk! Agreed, but don't treat all seamen as drunkards in consequence. Some seamen go to sleep on the look-out and allow a ship to run down another ship, and send three hundred persons, more or less, to certain death! Agreed, but don't treat every seaman as a murderer in consequence, and certainly don't run away with the idea that a survey can prevent the loss. Find a remedy for punishing a fraudulent shipowner and a dishonest worthless sailor, but don't treat them all as rogues until, by a process of examination and official selection, you think you can certify that they are innocents. Life is sacred, but large sacrifices must nevertheless be made in all callings. If enthusiasts are to put a stop to or interfere with all employment or training involving risk, and to set policemen and inspectors to watch over men to see that they don't incur risk, we shall become a sorry nation indeed. And, again, about one-third of our coasting ships belong to men who have been brought up in them, whose families navigate them and sometimes dwell on board of them. These mariners, and they are amongst the hardiest we have in Britain, know the ships as well as they know themselves. They can handle them, and sail them, and take them with safety from port to port, and every one on board exactly knows the character of the ship, what she can do, what she cannot do, and what she is liable to; and they go on board and make their voyages in the full knowledge of the peculiarities of their old craft and of the risk, if any, incurred. These are not men who go on board drunk, and who know nothing of the condition of the ship before they join her, but who really know all about her. Are enthusiasts to interfere and rob these poor men of their bread by breaking up their ships? If so it will be of immediate advantage to large shipowning firms who own coasting steamers, but will, with a vengeance, be ruining the poorer classes of the seafaring population, and will be lessening our power of defence at sea. And yet this will inevitably be attempted,

all because enthusiasts have chosen to advocate the putting of the seaman and shipowner into leading strings; enthusiasts who, whilst avowedly acting for the benefit of the working man, will take away deliberately from thousands of poor families their means of subsistence, to the benefit of monopolists of large firms who own coasting steamers, of railways, and of foreign flags. To be logical, lifeboat services must also be put down with a high hand lest the poor working men who man them should risk their lives.

But on this subject of risk, we may ask, is risk only to be found on the sea, or is it only incurred by working men? and are the working classes to be so hemmed in and tied to apron strings that they are not to be allowed to face and overcome danger? What is to be said of statesmen, men of letters, men of law, men of science: do they not incur dangers? Is not life sacrificed in every calling, and is the working man to be picked out and debarred from earning his livelihood how he pleases, and from attaining manliness, and self-reliance, and hardihood sufficient to enable him to face and overcome danger; to be protected in every place at home and abroad, to be protected from his employers, from his fellows, and from himself? If so, will he not eventually be reduced to a condition of second childhood, dependent on police for help, protection, and existence? and will not thousands of families suffer? The plea for interfering on behalf of the sailor is, of course, that he knows nothing about his ship when he signs articles; but seeing that he generally signs articles and undertakes to be on board some hours, sometimes twenty-four hours, before the ship sails, he really, if he fulfilled his agreement, would have time to see the state and condition of the ship, and, if not satisfied, would be able to put the law in force. But instead of this, he does not go on board at the time specified like a straightforward sober working-man ought, but he often lurches down hopelessly drunk, and is put on board just as the ship is leaving, or after she has left; and it is precisely for the benefit of this sort of worthless man who might know the state of his ship before sailing, but who prefers getting drunk, and going on board drunk, and jeopardising himself and the ship, that the present humanitarian agitation proposes to put the British shipowner under police surveillance, and to hamper honest trade in British ships.

Has it never occurred to any one that the life lost by sailors on the sea through drowning by wreck is very small indeed; 1,500 per annum out of 300,000 men—just one in two hundred seamen afloat all over the world!—a mere fleabite in the inevitable loss of life that must accompany our national struggle for existence. Other deaths amongst sailors

amount to 3,300 a year, showing that, even at sea, drowning by wreck is the least of all dangers. Let the sailing coasting trade be stopped, lest poor Jack's life is jeopardised by a chance of drowning. If this is done, the Fisheries, the *most dangerous of all callings*, must follow for the same reasons. This is the sum and substance of the present agitation. But it may be said that the wildest enthusiasts do not venture to propose to break up the Fisheries and the coasting Mercantile Marine; all that is wanted is to make ships safe and the sailors comfortable. We know that the wildest enthusiasts do not wish to break up the Mercantile Marine. Our strong point is that they will do it without wishing it, and without even knowing it. People who talk about reducing the number of lives lost on our coasts by the means of inspecting unclassed ships in port, talk as if inspected and surveyed ships were exempted from the fate of other ships, and as if they have never heard of tempests, and rocks, and hurricanes, and collisions, drunken seamen, and incompetent masters, or the fraudulent casting away of classed and surveyed ships just as they are going off the letter; or as if they had never learnt that in keeping pace with the world every man *must* incur risk, and every State *must* more or less sacrifice her people. Battles, travels, explorations, colonisations, commerce, late hours in Parliament, long study, scientific research, all these necessarily expend valuable life, and all demand living sacrifices. The sea—which has, to a great extent, influenced, trained, and developed Englishmen to be what they are—*must* have its victims too. Not necessarily and entirely drunken victims, or victims sacrificed by the greed of an ogre-shipowner, but noble victims who face the sea with all its vicissitudes and its changes in the full knowledge of the dangers they incur, and of free choice.

To put the case plainly, let us assume that the inspection of every ship and of her loading before leaving port, and the breaking up of all questionable ships, and minute State interference of this sort, will save life at sea, will not the consequent loss of freedom, independence, and courage lead to greater losses still? We cannot interfere with foreign ships. British or foreign ships must carry on the trade of the world, and our ships are to be so handicapped in the race that shipowning will be an impossibility in Britain; and, as regards our men, will not the craven spirit necessarily engendered by guardianship be in itself the greatest of national calamities? But when we know that the interference referred to will, without having the good effect imputed to it, have all the evil effects, nothing can be said for it by any man who really loves his country. If this State interference is to be extended as proposed, the mark will be overshot, and, in a mistaken and honest, but blind and irrational, endeavour to grapple with an evil that is exaggerated, or perhaps imaginary, we

shall snuff out our sailing coasting trade, as we have pointed out above, by rendering it commercially impossible.

The *Nautical Magazine* is not afraid to assert that the life of the individual is not so sacred that it must be guarded against all risks in carrying on trade for the national good, nor that loss of life at sea by wrecks is not a loss which the nation is called on to render impossible by annihilating commerce. Life legitimately lost at sea by the sailor, or in the mine by a miner, or in the study by a man of science, is life lost for the general good, and is a sacrifice that, although deplorable, is inevitable; a sacrifice made for the well-being of the whole community, and a sacrifice that no man who approaches it in full knowlege of the risks should be prevented from making. These legitimate losses of life must, so long as commerce is permitted to exist, be wholly undiminished by State restrictions in the matter of details, but other losses must be increased by the lessening of personal responsibility and personal acquaintance with the means of surmounting danger. The sailor who is too great a coward to go to sea and incur legitimate risk in a coasting voyage, but who is brave enough to incur ten times the risk in a drunken brawl, or is so poor a creature that he must sprawl on board drunk, and afterwards go to sleep on the watch and risk the life of every one on board his own ship, and other ships she passes, had better leave the sea, and not require State machinery to nurse him.

Already the shipowner is much in the hands of the State and too much in the hands of the seaman. We think that an appeal is necessary on behalf of our shipowners. At the present moment common sense says, wait the result of searching inquiry and legislate afterwards, if necessary; but enthusiasts say, legislate first and inquire afterwards. We regard Mr. Plimsoll's commission as a boon, for it must lead to the publication of truth, which shall supplant the fiction so largely, unfeelingly, and industriously, propagated. It will, we hope, find a way to punishing black sheep, and exterminating the ogre-shipowner; and, let us further hope, that instead of extending State interference and lessening personal responsibility, it will extend personal responsibility and lessen State interference. The shipowner is on his trial, and the Board of Trade are on their trial with him, and it will be strange indeed if something valuable is not elicited in such circumstances.

Before we leave this subject, we would invite our readers to study carefully articles that appeared in this magazine before Mr. Plimsoll's book was heard of. The present proprietor has had them reprinted in the form of a pamphlet, and they can be obtained of all the agents of the *Nautical Magazine* and of any bookseller.*

* *Shipwrecks: How they Happen, Why they Happen, and How to Prevent them.* By Thomas Gray. London: Simpkin, Marshall & Co. Sixpence.

OUR PRESENT IGNORANCE OF FUTURE NAVAL TACTICS.

The discussion of military subjects has become a recognised function of the public press, both daily and periodical. It must be deeply wounding to "men of peace" to find how large a portion of the daily newspapers is devoted to the consideration of things purely military and warlike. Sometimes it is a leading article; sometimes a special, or "occasional" essay; sometimes a cluster of letters, dignified with the honours of *leaded* type; sometimes all and each of these. "Our own" no longer divides with "our special" correspondent the distinction of alone supplying information from foreign countries, and on matters of present interest to the thousands of readers, who have both time and inclination to carry their researches beyond the telegrams and the City Article, "our military correspondent" now claims his share in the distinction. It is not, perhaps, too much to say, that during the Parliamentary, and what, in view of past and coming events, we may be justified in calling the "Tichborne" recesses, few portions of the day's paper are more largely read, or more generally discussed, than the various essays and articles on military subjects which it contains. At one time we are treated to new views on organization; at another to suggestions for improving our system of tactics; at a third to a statement of the relative merits of "Armed Sense," and "Armed Science." When the advertisement columns are filled with announcements of the contents of forthcoming magazines, it would be difficult to scan them without lighting more than once on the titles of papers with a thoroughly military scope and object. Indeed, so marked a feature of periodical literature has this become, that in a late number of one of the "Service" journals, a writer jubilantly suggests that one magazine, not hitherto considered more specially warlike than its contemporaries, should insert in its title the word "military." It is, perhaps, only a symptom of an ineradicable tendency of human nature, that all this warlike literature treats almost exclusively of the methods and appliances of land warfare. Even in a nation, which, in spite of Mr. Reed, is much given to complacent assertions of its maritime pre-eminence and of its intense interest in its Navy, many great questions which intimately concern the efficiency of the latter are allowed to remain unnoticed and undiscussed. Mankind still retains an unquestionable predilection for the older of the two forms of warfare. Whatever be the abstract reason for such a fact, we may leave to metaphysicians to discover; but, unless we fail to read many signs aright, a fact it is.

Naval affairs have been by no means altogether excluded from public notice and discussion. On the contrary, some have been discussed with

a heat and acrimony that could be hardly surpassed in a theological disputation. There is indeed some danger that the discussion of some branches of the naval art has been carried from the scientific to the polemical stage of argument: and worsted disputants on questions of naval architecture have even gone so far as to "take the law" of their opponents. Nor have questions of ships' armament been argued with less fervour. Advocates of rival systems of ordnance, having grown tired of attempting to convince each other of the superiority of their own or their friends' inventions, have—after a long interchange of hard names and imputations of unfairness—at last gone the length of holding up their antagonists to popular derision with a somewhat gloomy humour in lampoons. But though the great British public is perhaps not always disinclined to witness a "set-to," it is still apt to grow tired of the incessant rounds of an interminable fight; and it may not be amiss to try and direct its attention to some questions of naval warfare, which, if not in themselves interesting, are at all events of paramount importance. Not that the subjects to the discussion of which allusion has been made, are not also highly important; but they are by no means the only ones which a great naval nation should wish to see discussed and illuminated by the light of recent inventions and the rapid progress of science. If we are to confine ourselves solely to a series of arguments about curves of stability, meta-centric heights, thickness of plating, energy on impact, ribbed and studded projectiles, erosion of gases—useful and important as a correct knowledge of these matters undoubtedly is—and leave out of sight the consideration of how we are to use our armour-protected and steadily-carried weapons on the only occasions when they can ever be called into use, we shall somewhat resemble the "Greeks of the Lower Empire," indignantly cited by Napoleon, who were absorbed in grammatical disputations whilst the enemy was thundering at their gates. It may fairly be assumed that the chief object of possessing, or of trying to possess, that rather Utopian conception, the perfect ship-of-war, is to be able to make use of it, when it may unhappily be necessary to do so, with the best effect. In order to do this—it is perhaps almost a truism to state—our officers require some acquaintance with a definite system of naval tactics. That is just what we have not got, and what we do not seem much inclined to bestir ourselves to procure. Considerable attention has lately been—indeed is actually now being—devoted to devising a new system of tactics for our Army. It is not improbable that that force which, in after-dinner speeches at least, is generally styled "our *first* line of defence," would, *ex vi termini*, be *first* required to test its own peculiar tactical system. Let us devoutly hope that ere that time arrives it may have something of the kind. What should we think of the efficiency of the British Army if its tactical system had under-

gone no real improvement since the days in which the "Swedish battle," as devised by the great Gustavus Adolphus, was the model on which were formed all systems of military tactics? Yet analagous to this state of things is the condition of the British Navy as far as its tactical efficiency is concerned. Nothing had more completely stagnated than did the Art of naval tactics from, as the old sea song has it,—

> —— the days of the Rump and Admiral Trump,
> When Dutchmen wore bladder-legged breeches,

down to the time of Rodney's great victory over De Grasse in 1782. The first attempt to devise a tactical system for ships propelled by wind and sails, and armed with guns on the broadside, dates from the seventeenth century; such a system has in many essential particulars been continued even to our own time. It would surprise many to find, as they would find, on comparing whatever tactical instructions we now have with those of the age just mentioned, how little we have improved on the older ones. But great as has been the revolution in the land warfare, caused by the improvements in arms and organization, that in sea warfare has been far greater. The sea service, equally with the sister service on land, possesses all the improved weapons, and, besides them, there has been placed at its disposal powerful ships constructed on entirely new principles, and propelled by a hitherto undiscovered motive power. Almost every condition of naval warfare has undergone a total and complete change since the date of the last great battle of the British Navy. It may be that our fleet is never to fight another, but as we still appear determined to have a fleet, there is something to be said in favour of adopting some plan which may render its power effective. How little near we are to such a consummation may be seen by anyone who cares to investigate the subject on reference to a lecture delivered by Captain P. H. Colomb, R.N., at the Royal United Service Institution, no longer ago than the early part of the year 1872. Captain Colomb has for some time been honourably known for his labours in connection with the evolutionary and signal systems of the Navy; systems, be it known, on which the art of naval tactics entirely depends. He has naturally been induced to extend his consideration to the tactical system demanded by present requirements, and no one will deny that he brings to such consideration all the merit of an expert. He has another merit, not perhaps so common amongst naval tacticians—viz., that of possessing a graceful and fluent literary style, and the faculty of presenting to his readers even the dry details of naval evolutions under an attractive and interesting aspect.

It is worth while to listen to what he says. "These remarks," this passage occurs in the lecture of which we have been speaking, "are not

unnecessary at the outset of my paper. There is not one of us naval officers who has not either heard or expressed the most decided opinions on the efficiency of certain formations and the inefficiency of others. Yet I venture to say not ten per cent. of us have ever heard any good reasons as to why one formation is better than another; and not two per cent. have ever thought out the matter even superficially for themselves. The danger we run of committing ourselves to some definitive theory of attack and defence without any inductive steps leading up to it, is real and tangible; and if, instead of advocating a particular view, it should come to pass that I show the end further off than ever, and leave your minds open on the questions, I shall not consider I have done bad service." Again, speaking of the non-existence of any plan or system, he proceeds, "For if I be wrong in supposing a bad compulsory plan to be worse than no plan, still, *as no plan is yet adopted*, such investigations as mine go far to establish, not only a plan, but if properly conducted, a good plan." This is tolerably strong evidence, from a witness more than anyone likely to know, that whatever be the condition of the Navy as regards powerful ships and guns, its tactical efficiency is, to say the least of it, not perfectly satisfactory. Yet no one can more strongly express the opinion that it is quite possible to devise such a system of tactics as the present state of naval service has rendered necessary. "Much of the neglect," thus Captain Colomb begins his lecture, "under which my subject undoubtedly lies, may proceed from an idea which impressed me very strongly at one time, namely, that the attack or defence of a modern fleet cannot be profitably studied prior to the experience of many actual combats. It seems at first sight probable that no such thing as rule or law can be evolved except from the facts of experiment in war. It is, therefore, readily assumed that naval strategy is not yet in a condition to be made a subject of study. This line of thought would be excusable after many failures to discover the hidden law or laws which may exist, but it does not excuse the neglect to seek for them. We have no business to make the assumption in the first place, for it is founded on no data; and, moreover, I trust I have shown in former papers that so far from being the vague conglomerate of conflicting opinion generally supposed, a very superficial analysis recovers many points of absolute certainty, round which theories may safely revolve, or, at the very least, gives encouragement to persevere." But it is not necessary to rely solely upon the evidence of Captain Colomb, important though it be, to show that our tactical system has yet to be discovered. In the reported discussion which followed the delivery of the lecture will be found an unanimous agreement on the part of all who took part in it that such is the case. The testimony of that most distinguished and veteran officer, Admiral of the Fleet Sir George Sartorius, need only

be adduced in support of Captain Colomb's assertion. He said, "It is very necessary that some good theory should be now formed upon the management of fleets and ships, and future war tactics, based upon the best materials we actually possess in order to prepare and be in readiness for contingencies before they arrive." It is an historical fact that the greatest impulse given to the improvement of naval tactics was due to those who were not seamen, for example, the Jesuit Father, Hoste, and the Scottish Laird, clerk of Eldin. And in our own day Sir Howard Douglas began a work which, had he lived longer, he might have continued to the great advantage and improved efficiency of the Navy which already owed him so much. It is therefore, perhaps, not by any means too wild an aspiration to hope that, in the absence of any practical experience of naval war, the art of tactics may receive new developments from the thought and study of those who in these days devote themselves to securing and improving the maritime power of the country.

Of the sea fights of the future, it may be almost asserted that we do not know how they will be begun, how they will be carried on, nor how they will end. The perpetual see-saw in the superiority of the gun and the armour-plate respectively, renders a prediction of the future value of either rather hazardous. But we may at least enumerate the various new weapons which science has placed at the disposal of naval officers, and the several methods in which these most destructive instruments are intended to be used. Ancient prescription and modern popular favour give, in any such enumeration, the right of priority to the gun. The art, of which the rules govern the use of that weapon, is very modern. Naval gunnery dates in reality from a period more recent than the battle of Navarino, at which officers, still on the active list of the Navy were present. The age of rifled ordnance is hardly yet in its teens; and even now the latest additions to our stock of guns have not yet been tried afloat. Sinope, which shortly preceded the actual Crimean war, was the first important naval action in which shell fire from guns, as distinguished from that from mortars, played any great part. Our present weapons are in reality and in name, arms of precision. The accuracy of fire of our largest guns, provided with rifled bores, carefully constructed projectiles, and finely marked and delicately graduated sights, is a thing undreamed of in the days of Nelson and Collingwood. The bursting charges of our modern shells surpass in weight the whole projectile fired from the old smooth bore guns which battered the Franco-Spanish fleet at Trafalgar. Length of range has, of course, prodigiously increased, and the distance, known in Rodney's time as *random shot*, would now be regarded as an easy limit of accurate practice. The word "shell" itself has ceased to indicate but one description of projectile, and now gives a generic name to a whole class with several subdivisions.

The shrapnell shell filled with its hundreds of balls, is for our newest guns, ingeniously constructed so as to act the part of a gun itself; and, when, on being fired, it has attained the most convenient distance from those whom it is intended to destroy, it can pour forth a terrible *mitraille* of its own. Nor can iron plates be regarded as a secure defence against shells since Major Palliser has invented his *chilled*, or hardened, projectiles, which penetrate a thick plate, and burst when so placed as to do most damage.

Before the gun in point of antiquity, according to some before it in destructive power, and next to it, at all events, in tactical importance, is the *Ram*. The ancient mode of attack by striking at the enemy's ship with the prow of your own has recently been revived. This revival of course is owing to the general introduction of steam propulsion, and so important have been its effects, that the system of ship construction has been very generally modified since the ramming attack has again come into favour. No efficient man-o'-war is now built without a prow, or beak, *vulgo* a ram, specially designed for purposes of attack. The records of accidental collisions between ships sufficiently illustrate the terrible destruction which could be wrought by one vessel purposely constructed for ramming when designedly directed at speed against another.

But the weapons for our future use in sea-fights are not those only which have been suggested by the experience of long ago. The subtle electrical torpedo has lately been added to the armaments of ships of war, and many ingenious officers are at this moment occupied in developing its destructive powers. So important do the Americans deem this weapon as an engine of destruction, that in an official report lately presented to Congress, by the chief of the "Bureau of Construction and Repairs," that officer states his conviction that when the fact of its complete adaptability to war purposes "becomes well known, the question of building iron-clad cruising vessels will be solved." Hitherto the torpedo, whether electrical or mechanical, has been almost exclusively used as a coast defence; but now it is to form part of the equipment of our fleets. Captain Harvey, a naval officer, has devised a weapon which, by its peculiar shape, is caused, when towed from a vessel, to diverge from her side, and thus present an obstacle of formidable danger to any enemy who should approach too near. In addition to this, we are promised the use of an extraordinary modification of the torpedo, proposed by an English manufacturer and engine-builder, long resident in Australia, Mr. Whitehead. The details of this gentleman's invention have been kept secret, except from a select few; but from accounts of it which have found their way into the press, it seems to be a kind of diminutive submarine vessel, supplied with some internal motive power, and capable of itself regu-

lating its course and direction to a very wonderful degree, and of travelling with considerable speed towards the object aimed at, on contact with which it would explode.

Offensive weapons have not, however, had it all their own way in the race for superiority over defensive armour. Thickness of plating is continually on the increase; and the plan of towing a torpedo by the side of the ship will unquestionably render the ramming-attack always hazardous and difficult, and frequently absolutely impossible. As yet, not very much attention has been bestowed upon the possibility of guarding against the destructive effect of the torpedo itself; nor have the thoughts of our officers been much turned toward the practicability of disabling by vertical fire ships which are impervious to horizontally projected shot and shell. The construction of ships on the cellular system, specially to neutralize the effects of torpedo explosions, and the adoption of sea-service rifled mortars for accurate fire on the decks of vessels the sides of which are protected by armour too thick to be penetrated by any guns which there is any hope of carrying afloat, are innovations which are but just appearing above the horizon of naval invention.

As naval actions in times to come will be fought with new weapons, and between ships of a new description provided with a new motive power, it is more than probable that they will differ greatly from those of the past. From the final adoption of a numerous armament of broadside-guns, down to the last great action fought at sea, the mode of fighting, in essentials, varied but little. The great thing was to get into such a position that all the guns on one side could be brought to bear upon the enemy, and then began a game of mutual pounding, of which he, who could hold out longest, became the winner. The object of all manœuvres was to get into the above position, and, when once it had been attained, manœuvring ceased. The historian relates that, on "the glorious 1st of June," Lord Howe, when he saw the greater number of his ships "in station," "emphatically closed his signal-book," as though to show that he considered all manœuvring at an end, and that the work before his fleet thenceforth was fighting alone. "It was the height of strategy," as Captain Colomb says, "to bring our strong points against his (the enemy's) weak ones; and broadside to broadside did that in perfection." Besides, too, the masts and sails, the possession of which alone ensured the power of movement to the ships, were soon damaged or destroyed, and all possibility of any useful manœuvring was thus completely put out of the question.

Hereafter the duration of the motive power and the existence of the ship as a fighting component of a fleet will end together. The former destroyed, the latter is at an end also. A constant state of restless motion will be a necessity of future naval engagements. It should be

the aim of the tactician to render that state of motion as full of purpose as possible. Suppose two hostile fleets sight each other in the midst of the Atlantic Ocean. They will probably be within sufficient proximity for actual combat in less than an hour from the moment when each first descried the other. Preparations must be rapid. No longer as in the "old war" will two fleets, of which one is to windward, cruise in sight of one another for days, one eagerly looking for a change of wind to enable it to close with its adversary. From sighting to beginning the fray will now be only a question of minutes.

The two fleets having sighted each other as we have supposed, *will*, probably—for here we must enter into the region of conjecture—*rapidly* near each other. As they approach, fire will most likely be opened from those guns (with which all efficient ships are now provided) that are mounted on the bow, or so as to fire ahead. The shots that can be fired will not be numerous. The hostile squadrons will soon be too close for "bow fire" to be of any further use; and as they get very near each other, captains will, perhaps, not care to have their view of the foe impeded by clouds of smoke hanging about their ships. Each vessel, still maintaining its speed, will not improbably look for an opponent in the enemy's force upon whom to try her "ram." The enemy, on the other hand, will most likely be preparing to do the same, and then between each pair of ships will begin a game of skill in manœuvring, to avoid not only the hostile prow, but also the torpedo which will inevitably be towed alongside. In addition to these manœuvres of defence, there will be those by which it is attempted to deliver a deadly thrust with the prow, to pour in a concentrated broadside from the best position, and also to plant the terrible torpedo beneath the opponent's bottom. Supposing the skill on both sides to be nearly on an equality, the fleets will at first pass through each other, then they will have to turn round, necessarily with circumspection, to avoid being caught in flank whilst so doing, and perform the same evolutions over again. Against disabled ships, if there are any, will be launched Mr. Whitehead's fish-torpedo, which may be regarded as the modern equivalent of that long-used naval invention, the fire-ship. Ships in future will be able to carry whole squadrons of these destructive little vessels—for such they may be called—and when one fails, may quickly send another to perform its work.

It is often lamented that the introduction of steam and the consequent disuse of sails have destroyed much of the romance of the sea. The trim frigate has given place to the monitor, and the snowy canvass to the hideous smoke-stack. It will probably not be so in future sea-fights. The excitement and the interest of them will be greater than those of former days. The old protracted cannonades from ships stationary are as much things of the past as the twelve and eighteen-pounders which

contributed to them. In the old days, as we have said, all manœuvring ended when the battle began; henceforth they will begin and end simultaneously. To the interest of one of the old frigate-actions a battle between single ships hereafter will add that of a contest between two agile gladiators of the arena. Mr. Whitehead's torpedoes will require more exciting and more skilful tactics for their use, than did their prototypes, the fire-ships which gave so much anxiety to worthy Mr. Samuel Pepys. No future Secretary to the Admiralty is likely to record in his diary as he did under date of June 4th, 1666, "We fought them" (the Dutch), "and put them to the run, till they met with about sixteen sail of fresh ships, and so bore up again. The fight continued till night, and then again the next morning from five till seven at night. And so too yesterday morning they began again and continued till about four o'clock." In fights to come things are likely to be settled somewhat more expeditiously. At a recent meeting of the Institution of Engineers and Shipbuilders of Scotland, Mr. Robert Duncan, the president, in his introductory address, touched upon the question which we have been discussing. His remarks, as those of an eminent man highly qualified by his pursuits and the evident thought he had bestowed upon the subject to form an opinion, are well worth attention. After speaking of our comparative naval position, and of the means at our disposal, he said:—". . . . We have ships equal to the best anywhere else, and are beginning others superior; we have guns unsurpassed in weight and penetration, and do not mean to stop at that: and beyond that, the experience that has been acquired of the use and power of the torpedo, as an instrument of offence and defence, has demonstrated its value as a coast-guard superior to all other modes of coast-defence; while its application to the purposes of sub-marine attack point not indirectly to a revolution, if not to a revulsion, in the practice of naval warfare, and the feelings with which humanity is likely to regard it. Evidently the tendencies of modern warfare on the sea is not to a chivalrous struggle for mastery or honour, but to a murderous one intent on wholesale destruction, alike without glory or safety; a *contest in which one, or both, of the combatants must certainly perish.* The final result of this style of warfare must be, that men will refuse to go to sea to certain death, and we shall have a repetition of the game of the Crimean and Franco-Prussian wars; the weaker, or *least prepared,* will keep in port within a torpedo-reef; and the stronger will chafe in idle impotence outside this belt of certain destruction." Naval officers may be excused for doubting that the Navy has already been thus improved off the face of the earth, but they will probably derive from these remarks an increased conviction of the necessity of knowing how to attack and how best to resist.

To account for the oblivion into which the study of the art of tactics

has fallen, many theories may be set up. It will be more profitable to try and rectify than to account for such a state of affairs. The intense professional conservatism of naval affairs has undoubtedly much to answer for in having kept up a belief in old methods, which should long since have passed away. Entering the service at a tender age, cut off by its conditions from frequent converse with the outer world, the repository of a knowledge shared by his fellow-seaman only, it would be strange if the naturally conservative tendency of an Englishman were not intensified by a life spent in the Navy. Mr. Cobden expressed his opinion that in their adherence to old plans, the English were not so much Conservative as Chinese. In professional matters the naval officer is often an Englishman of the English; a Conservative of a type to which the highest Chinese Tory would be a Radical of the most advanced class, fitted to take his seat on the benches of the extremest Left. Such prejudices are being now rapidly undermined, and are falling away. A misconception of the intentions of the authorities has, perhaps, conduced to the retention of them. Unlike his brethren of the Army, the officer of the Navy is precluded from discussing professional subjects in print. It is more than probable that this prohibition was only intended to include such discussions as might weaken discipline, or divulge secrets, which it was fitting should be kept. It has, however, placed the intelligent and the thoughtful on the same level as the stupid and the ignorant, and has greatly tended to induce, or at least to maintain, a stagnation of professional zeal. In reality, the prohibition was never levelled at the discussion of all that relates to the real art and technical part of the profession; if it were, it has been so much more honoured in the breach than the observance, as to be practically repealed. At least, we may say, as old Pepys did on the last day of the year—"but I hope all things will go well, and in the Navy particularly, wherein I shall do my duty, whatever comes of it." We may be sure that many a naval officer who never read a line of Mr. Pepys's diary has often expressed the same hope and the same determination.

All questions of improved efficiency of our defensive forces must sooner or later be investigated as to their probable cost. It is almost certain that much valuable information might be obtained at but a trifling increase of expense. The wise custom of the last three or four years has collected in "combined squadrons," the commands of several flag officers. Much improvement in the evolutionary knowledge of our officers has been the result. The additional cost of a few days' tactical experiments would not be very enormous; it would amount, probably, to about one-twelfth of the loss of the purchase and re-sale of the extra horses required by the Control Department of the Army at the late manœuvres; no very extravagant price to pay for knowledge which

might prove inestimable. The Russians, to whom we owe the origin of so many panics, have thought it worth while to expend some tons of extra coal in trying experiments of the kind. The British Navy ought scarcely to lag behind that of the Czar in progress. It should be remembered that it is a force, which, amongst navies, holds a place of even more undisputed pre-eminence than does the Prussian Army amongst armies. It is almost universally looked up to and copied from its most important details down even to the fashion of its buttons and gold-lace.

SHORT YARNS FOR SAILORS.

In a once popular song it is said, "There's a sweet little cherub that sits up aloft, to watch o'er the life of poor Jack." We are not sure that it is the especial function of any cherubs to be fluttering over the mast heads of vessels, nor do we know any particular reason why a cherub who may do this should be described as little. However that may be, cherub or no cherub, big or little, poor Jack may rest assured that in all his wanderings, in all the vicissitudes of his career, in all the ups and downs, physical and moral, of his life on earth, there really is above and around him an observant eye, a sympathising spirit, a guiding hand, a presiding genius, that sooner or later turns every guilty pleasure into pain, every generous pain into pleasure, neutralising and changing every temporary influence and effect according to the needs of human character and the sacred purposes of Heaven. Poor Jack! it is too much to expect of him to cast aside abruptly all his superstitions, nor would it be, even if practicable, quite desirable. For superstitions have an imaginative element in them which may be purified and made spiritual so as to become a means of picturing the good rather than the bad, the beautiful and true rather than the false and unseemly. We would therefore enjoin every one on whom Nature has bestowed the gift of fancy, the shaping spirit of imagination, not to despise that endowment as needless or harmful, but to use it for the purpose of imparting warmth and colour to pale thought, fervour and spirit to dull feeling, animation to drooping faith, and lightness to the burthen of care. We would not abruptly disturb in the mind of a poor sailor a belief in spirits hovering about the vasty deep, if in any way such belief is comfortable and helpful to his feelings. We know not as yet all the particulars of the Divine Government, how the Supreme Being, who is said "to give his angels charge concerning us," has distributed his functions among the heavenly delegates, or whether he has delegated

them at all. There is a kernel of truth and beauty within the husk and shell of many superstitions, ancient and modern; and when we are dealing with traditions, legends, myths, and popular fancies, we must discriminate between the covering that envelopes an idea and the idea itself—between the form and the essence. Many of the alleged facts of history are quite inadmissible as facts when inquired into and tested by evidence. But even whilst we reject them in form, it is possible to discern within some of them a meaning which is beautiful and true. As most kernels clothe themselves in some kind of husk, or shell—as most essences are concealed in some kind of substance, so *perhaps* the thoughts, feelings, and energies, of the spiritual realm around *us* may, for aught we know, take up, temporarily or permanently, a kind of form or "spiritual body," though the ordinary averments of having *seen* that form may be referable to hallucination and disease. It does not follow that there can be no form at all because of our disbelief in any that have hitherto been described. If there are spiritual influences there may possibly also be spiritual beings that enshrine those influences and act as administrators of the supreme. There may be a spirit that brings calamity when it is needful—a spirit that scatters benefits and pleasures—a spirit of beauty and delight—a spirit of toil and care. There may be spirits in all the elements of nature, as, for example, a spirit of the wind, who without any power of substituting personal will for natural law, may yet have some duties and functions in connection with the movements of the air; a spirit of the morning accompanying the light when it tips the hills with gold, and borders every wave with a fringe of diamond spray; a spirit of Night present when darkness and mystery hang over the seas; a spirit of calm rejoicing when the bright water is smooth as a silvered floor prepared for a dance of the nymphs and naiäds; and a spirit of storm in sympathy with the scene when deep calls unto deep in tones of terror, when lightnings flash, when thunders roar, when billows surge and foam, and when every beam and plank of the ship seems to express its agony as it toils through the boiling seas. Let the poor mariner, if he will, personalise these mighty and beautiful forces, and conceive of them as in some way connected with the agency of spirits: only let him remember that all his genii must be subordinate to one over-ruling and consistent will; that there is a unity of purpose in the infinite variety; that lines of connexion run from part to part, from storm to calm, from brightness to gloom, from night to day, from frost to flowers, from joy to sorrow, and round again to joy. Let him remember that none of the forces of Nature will ultimately harm him, even though for the time being they grind his body into powder or drag it down "full fathoms five" to be torn and mangled by monsters of the deep.

Ye lads of the forecastle; ye brave and patient mariners standing on the yards, cold and wet, with the wind on your cheeks and the spray in your hair, take this faith into your hearts and be comforted. Though your ship tosses, and heaves, and rocks, and swings, and threatens to heel over and go down, that which is good within you cannot drown. There is an ætherial mysterious something in every man to which Nature ministers, but which Nature does not destroy. In its unfoldings, its growth, its increase, its modifications and changes, it forms what we call Character. There is no station in the social world, no occupation, or industry, or function, however lowly and obscure, that may not be dignified and made beautiful by it when it is noble: there is no throne or other external position of authority and splendour that may not be made utterly contemptible by it if it be mean. It is mainly for the cherishing and development of Character that all the moral and physical powers work around us. For this, among other ends, the winds blow and the waters roll, storms desolate, earthquakes destroy, and Nature goes through all the vicissitudes of the year, changing her wintry rags for robes of summer beauty and turning the cold air into song. It is for this that want and woe, misery and pain, joy and sorrow, penetrate the bodies and the souls of men; and if there be, according to the fancy before alluded to, a cherub specially interested in the fate of poor Jack, the purpose and intention of such a guardian must chiefly be to upraise the poor fellow in character—to take gradually something of the beast out, and to put gradually something of the angel in—to make him gentle by beauty, strong by difficulty and hardship, brave by danger, healthy by temperance, efficient in duty by thought and experience, manly and self-respecting by the consciousness of doing work essential to the world.

This, then, is the first of the yarns we purpose to spin. It is founded on the idea that there is everywhere, both in the social and the material world, an over-ruling Power or Providence, "a Divinity that shapes our ends"—a Power that is capable, by means of its mysterious agencies, of brightening our mental clouds with light, of making our innocent failures the stairway to a true success, of turning our afflictions into benefits, and our sorrows into joy. In this way all nature and all human life become a process for evolution of *Character*—the only thing of real consequence to us in this world, and the only thing we can carry away into another. In future yarns we may possibly have to spin a few sentences on other subjects, such, for example, as Love—that beautiful feeling intended for all humanity, and particularly liable to affect the susceptible nature of the Mariner, as he thinks in the night-watches of the absent ones far away, it may be of some kind, good mother in "the old house at home;" or of some patient sister who bears unmurmur-

ingly the burden and heat of the day in domestic duties and family cares; or of the loving wife and her little ones; or of "the girl I left behind me," when Jack is on the road to matrimony, but not at the goal. Other yarns, perhaps, may be spun on such subjects as discipline and duty; on pleasure-seeking when on shore; on interest in the improvement of one's country; on beauty and variety in other lands and other people, or on some topics like these.

But, hark, my brave lads, there is a peculiar whistling through the cordage which indicates a rising wind from a new quarter; the barometer is falling, a darkness overspreads the sky; we may have a dirty *night;* the captain has gone on the bridge with trumpet in hand, the mate is standing in the chains, holding the lead ready for soundings. Every man promptly and cheerfully to his post! In rough weather at sea the most useful of all yarns is probably rope yarn.

E. A.

OUR GREAT PORTS.

SUNDERLAND.

THE first mention of this place is by the Venerable Bede, whose birthplace it has been alleged to be. He calls it "Wiramuthau," or "Sundorlande." He says that Benedict founded a monastery there. It appears, on the sixth return of the abbot from Rome he obtained, in exchange for valuable presents, a grant of "three hides of land near the south bank of the Wear." The grant was procured from the then reigning Saxon King of Northumbria. He is called, indifferently, Ealdferth, Alcfride, or Alfride, and reigned from A.D. 685 to 705. Bede is said to have been born, according to Symeon of Durham, in the year 677, upon the estates belonging to the abbeys of St. Peter and St. Paul, situated at Jarrow and Wearmouth. The *Penny Cyclopædia* has it that Northern or Monkwearmouth was a place of note in the Anglo-Saxon period, and that the monastery was founded there in 674. It further states it to be probable that there was a previous one. Which of these dates is the right one it is difficult to fix, especially as the exact date of the birth of the Venerable Bede is uncertain. He, however, states in his "Ecclesiastical History of the English Nation," that "he was born at Sunderland, of the same monastery;" or, as King Alfred the Great has it, in the Anglo-Saxon version of that book, "Wæs ic acenned on Sundorlande thæs ylean mynstres." In the original Latin copy the word used for the grant of land to the monastery is "territorium," and disputes have arisen as to this

word being translated "Sundorlande" into the Saxon. Dr. Lingard thinks the name arose from the land being "sundered" by the river. This view is advocated by another writer, who describes it as "A demi-island in the north-east part of the Bishoprick of Durham, over against the mouth of the River Were; which, being pulled asunder from the land by the force of the sea, hath the name of Sunderland." In several ancient records it is called Weremouth or Wearmouth. In Speed's map of Durham, dated 1610, Sunderland and "Monkwermouth" are placed on the north side of the river; and "Weremouth" on the south side. Passing from the consideration of the origin of the name, there is no doubt the advantages of the place were known not only to the Saxons, but also to the Romans. Ptolemy mentions the River Wear under the name of "Vedra;" and it is said that the monastery which Benedict raised was constructed of materials taken from the ruins of one of the Roman stations, named "Ad Ostium Vedra." It has often been remarked that the Romans wisely chose their places of strength at the mouths of rivers, and it is not at all likely they would overlook such a place as this. Ample confirmation of the fact is found in the numerous remains which have been found there; of such were coins of the Emperor Constantine, found when excavating to build houses. Similarly, the remains of a Roman pottery were discovered; also a figure, or "Lar"—household god—was found in a quarry close to the town. These facts tend to prove that the place was known to the Romans, although not mentioned by writers on Roman Britain. It is probable that other remains would have been discovered had extensive encroachments not been made by the sea on the land at the mouth of the river. After the death of Bede (or Beda), a cloud gathers over the annals of the place. He was one of those shining lights who, amid the gloom of the early history of England, shed a ray of brightness all round. Of him the district ought to be proud. He expired on the 26th May, 735, according to the best accounts. The cause of death was an asthma, and he was engaged up to a very short time of his decease in dictating the closing chapters of two works—one the translation of St. John's Gospel into the Saxon tongue; and the other an extract from the works of St. Isidore. As his amanuensis concluded his labours, he exclaimed, "Now it is finished." To which the dying monk replied, "Thou has said the truth, *consummatum est.*" Shortly afterwards he expired with an ascription of praise to the Trinity on his lips. His body was buried at his own monastery at Jarrow. The Latin legend on his tomb has been thus rendered:—

Here in the flesh rests Bede, the priest, O give
His soul with joy eternally to live;
And let him quaff, O Christ, of wisdom's stream;
This was his wish, his fond, perpetual theme.

Little seems to be known of the place for hundreds of years after the death of Beda. In the ninth century it was visited by the Danes, who destroyed the monastery at Monkwearmouth, and it remained desolate till after the Conquest. A restoration then took place; but, from want of funds, probably, it soon after became reduced to the rank of "cell" attached to the neighbouring institution of St. Cuthbert at Durham.

The first notice of South or Bishop Wearmouth, is in a charter granted by Hugh Pudsey, Bishop of Durham, A.D. 1154. It conceded similar privileges to those enjoyed by the Burgesses at Newcastle, and was intended to encourage the commerce of the port. Some of its provisions are a little curious. For instance, it is stipulated that, "If a ship touch at the Wear and is about to depart, any burgess may purchase whatever merchandize he wishes from the ship, if any one be willing to sell to him; and if any dispute arise between the burgess and the merchant they must settle it within the third influx of the tide. Merchandise being brought into the borough by sea ought to be landed, except salt and herrings, which may be sold in the ship at the will of the seller." The abolition of feudal restrictions was calculated to encourage the trade, but the terms of the document sound very strange in the ears of this "free-trade" generation. This old charter was produced in court at the assizes held at Carlisle in 1851, in a disputed case of primage dues.

A similar charter was granted by King Henry III., during the next century. Another important charter was that of Bishop Morton, A.D 1634, for encouraging trade and incorporating the borough of Sunderland, giving to it a mayor and twelve aldermen. The preamble to this charter sets forth the great progress which had then been made by the place as a trading community. It recites that it was "used by many ships and mariners, as well within England as from foreign parts, introducing merchandise, goods, and other saleable articles, and exporting sea coals, grindstones, rubstones, and whetstones, and other merchandise, for the good of the State, by the payment of duties, &c. . . . . and was greatly increased by the multitude of seamen that resort to the said borough." About this period a great influx of population took place, especially from Scotland, and to this day the Scotch element seems to have a considerable share of the business of the town. In 1635, the levy of ship-money made on Sunderland, in conjunction with Hartlepool and Stockton, was a ship of 200 tons burthen, having 80 men and double equipage. The expense to be £1,850 or at the rate of 3s 6d. in the pound on the county rate. The parish of Sunderland was detached from Bishopwearmouth in 1719, for parochial purposes. Under the Reform Act (1832), it was made a Parliamentary borough, and has had several members to represent it, who have distinguished themselves for their advocacy of

the rights of the shipping interest. Amongst those, W. S. Lindsay, Esq., stands out prominently; and the present members have also taken an active share in the same direction. Up to the time of the Municipal Reform Act, the corporation, as a public body, had nearly fallen into disuse; but since that period it has risen to be one of the most active and influential local bodies in the kingdom.

A few statistics will best set forth the progress of the town:—

In	1681	the population was	2,490
,,	1781	,, ,, ...	20,940
,,	1801	,, ,, ...	26,511
,,	1821	,, ,, ...	33,911
,,	1841	,, ,, ...	56,607
,,	1861	,, ,, ...	85,797
,,	1871	,, ,, ...	104,490

Including the creek of Seaham, the number of tons of coals shipped was:—

		Coastwise.	Foreign.
In	1838 ...	948,429 ...	308,168
,,	1839 ...	913,960 ...	370,620
,,	1869 ...	2,117,775 ...	1,211,383
,,	1871 ...	2,087,082 ...	1,540,844
,,	1872 ...	1,761,387 ...	1,496,417

The number and tonnage of vessels registered were:—

In	1832 ...	728 ...	129,309
,,	1847 ...	870 ...	178,584
,,	1849 ...	997 ...	198,528
,,	1861 ..	1,088 ...	249,293
,,	1871 ...	756 ...	221,567
,,	1872 ...	709 ...	214,619

The vessels built were:—

In 1871	... 27 sailing vessels.	...	10,705 tons.
,, do.	... 83 steamers.	...	62,491 ,,
	110		78,196
In 1872	... 12 sailing vessels.	...	4,646 tons.
,, do.	... 112 steamers.	...	87,130 ,,
	124		91,776

The Customs duties amounted to—

In	1858	£101,159
,,	1859	99,115
,,	1870	79,716

The coasting, colonial, and foreign trade showed the following results inwards :—

Year.	Coastwise.		Colonial.		Foreign.		Total.	
	Vessels.	Tons.	Vessels.	Tons.	Vessels.	Tons.	Vessels.	Tons.
1849	1,270	103,233	83	20,890	1,295	170,145	2,648	294,268
1861	1,262	120,553	105	27,400	2,873	486,282	4,240	634,235
1871	904	90,353	21	13,324	3,278	800,842	4,203	904,519

The same trades outwards displayed results as follows :—

Year.	Coastwise.		Colonial.		Foreign.		Total.	
	Vessels.	Tons.	Vessels.	Tons.	Vessels.	Tons.	Vessels.	Tons.
1849	9,469	1,237,440	119	27,351	2,186	305,801	11,774	1,670,592
1861	11,745	1,678,919	251	95,013	3,481	666,850	15,477	2,440,782
1871	8,203	1,333,401	115	58,154	3,534	943,625	11,852	2,335,180

In glancing at the annals of this place, it may seem a little strange that the Bishops of Durham possessed such power over it. It must be remembered that in feudal times the Lords of the Church possessed, in many cases, as much power as the "lay" lords, or rather the barons. The Church was then a Church militant in more senses than one, and one at least of the Bishops of Durham was in the habit of taking the field at the head of his vassals. From time immemorial they possessed a royal jurisdiction of admiralty over the County-Palatine, and to the profits thereon, including wrecks of the sea, duties on ships plying to its ports, anchorage, beaconage, wharfage, moorage, &c. Hence, the power of the Bishops to grant charters, the same as other feudal lords in their localities.

The peculiarities of the trade of Sunderland may be stated to be that of shipbuilding and coal shipping. Especially for the former has the port been celebrated for many generations. For the building of wooden ships, some few years ago, before the iron and steam era set in, the Wear may be said to have been the first in the world. Even now for the building of sailing vessels of iron or wood she is unsurpassed in number and extent of tonnage. This is too a very old feature of the business of the place. So far back as 1346 it is recorded that Thomas Menvill occupied Hendon, at two shillings per annum, and that

it "afforded him a safe and convenient place for the building of ships." Coming down to more modern times it is found that a piece of waste land—a "jura regalia" of the County-Palatine of Durham—was used, in 1792, by William Havelock, Esq., of Ford Hall, and whereon he built in that year three vessels, named the *Themis*, *William*, and *Ellen*.

The adriotness and quick power of production of the Sunderland ship-builders have always been a matter of wonder, if not of envy, to many of their cogeners. The extent of the coal trade is fully set forth in the figures given above. In the coasting coal trade Sunderland is the second port in the kingdom. As was shown in the March number of the *Nautical Magazine*, that Newcastle was the first port to raise and transport coal. That occurred so early as 1234. There are no records to show when the trade sprang up at Sunderland, but it could not have been long after its neighbours, for the rolls of the Benedictine "cell" at Monkwearmouth show amounts received for "staiths" erected on the Monks' property so far back as the beginning of the fifteenth century; and it is likely that coal must have been raised and used there some time before even that period. Towards the end of the reign of Elizabeth, the shipping of this staple began and flourished so much that it is stated a considerable increase soon took place in the town. This prosperity could not have been of a very extensive nature, as the population only amounted to that of a village for half a century afterwards. But, no doubt, it was of a character to cause a sense of pride in the hearts of the burgesses in those primitive days of ships and maritime commerce. It is curious to note the difference of view assumed by our ancestors and ourselves in regard to matters of extent; and, doubtless, if anyone in those days had predicted that Sunderland, in the year of grace 1872, would have shipped three million tons of coal, a commission in lunacy would have been empanelled in his behoof, and the monks of "Wiramuthau" would have chuckled over the prospect of the increased rents of their "staiths," as they gazed on the lean roll of 3s. 4d. per annum for the one at Thrylstanhugh. But, such is the result of that natural propensity to trade which burns so briskly in the breast of every Briton. Instead of those paltry indices of weaklings in the commercial world, as displayed by the ecclesiastical records, there are the docks, and the railways, and the steamers, with their millions of tons weight and their millions of pounds sterling. The docks at Sunderland are only of modern date, and since their adoption the trade has expanded unprecedentedly. The south dock (now named the Hudson Dock, North) was opened for traffic on the 20th June, 1850, and the extension (now named the Hudson Dock, South) and the south outlet were opened in November, 1854. The Hendon Dock was opened in June, 1868, only five years ago.

The areas of these works are as follows:—

North Tidal Basin	2 ac.	3 rd.	0 poles.
Half Tide Basin	2 ,,	2 ,,	1 ,,
Hudson Dock, North	18 ,,	2 ,,	16 ,,
,, South	14 ,,	1 ,,	27 ,,
South Half Tide Basin... ...	1 ,,	2 ,,	17 ,,
Hendon Docks	11 ,,	0 ,,	0 ,,
Total	50	4	21

The area of the South Harbour is 28 acres. The depth of water, at ordinary spring tides, on gate cills of entrance to North Half Tide Basin and the Hudson Dock is 20 ft. 6 in.; and on gate cills from Hudson Dock, South, to South Half Tide Basin, 22 ft. 6 in.; and from the South Half Tide Basin to the South Harbour, is 24 ft. 6 in. The depths on cills from the Hendon Dock to the South Harbour, is 26 ft. 6 in., and the cill between Hendon and Hudson Dock, South, is 28 ft. 6 in. The depths in the docks are:—

Hudson Dock, North...	22 ft. 6 in.
,, South	24 ft. 6 in.
Hendon Dock	29 ft. 6 in.

The lineal length of dock quays is about 13,500 feet; that in the lower harbour is 6,000 feet, some of which is not public property, being owned by private firms.

The practice of vested interests interfering with public rights appears to be of ancient date at Sunderland, as well as at many other places. For, so far back as 1345, it is recorded that the dues of the port were leased to Thomas Hatfield, Bishop of Durham, and in 1456 the then Bishop granted Ralph Bowes dues on the ships for life; but this little arrangement was overruled by letters patent issued by Edward IV. in 1463, granting them to Robert Berham for £6 per annum. It would appear, too, that in those "good old times" the servants of the Crown were allowed a little more latitude in business transactions than in these degenerate times; for it is recorded that, in the year 1715, William Ettrick, collector of Customs, owner of a copyhold piece of waste land, built a quay forty-eight yards long. This was not done, it may be presumed, without an ultimate view to profit and sundry dealings with ships. The same proceeding was performed in 1601, by Ralph Bowes, Vice-Admiral of the County-Palatine of Durham, by special license from the Bishop. Hence the like origin of many vested and private rights. But the preservation and improvement of the harbour are owing to Commissioners appointed by successive Acts of Parliament. They have

effected wonders there. Amongst other things may be prominently mentioned the building of the north and south piers; the removal, after it was built, of the lighthouse to the termination of the extension of the pier; the building a bridge across the Wear, 94 feet high, and 236 feet span, under which vessels of 300 tons can pass; and last, though not least, the building of splendid docks, in the teeth of the stormy German Ocean, with gates opening right into the sea. The spectacle of first-class steamers sailing from these docks, without going into the harbour at all, is a striking contrast with the picture drawn by Beda, of the "small craft which frequented Sundorlande for its convenience and that of the monastery," 1100 years ago.

To show the amount of difficulty the Commissioners and their engineers have had in dealing with the harbour, it may be stated that, in 1719, high water mark was 150 yards east of St. Peter's Church, and, in 1849, it was 420 yards, the channel being diverted by the "bar." In 1783 the entrance was warped by a sand bed across the harbour mouth, leaving scarcely depth enough for a "light" vessel. The encroachments of the sea from time to time have been surprising. In 1780, 1783, and 1808, batteries and part batteries, erected on the town moor, were swept away. But these little playfulnesses of the "rough North Sea" appears now to be almost entirely curbed by the energy of modern engineering skill; and, in spite of the law of geological trituration, the inhabitants of Sunderland appear to be holding their own. In addition to the sea walls around the docks, new quays are being erected. The river is also suffering excoriation, like its sister Tyne, and is to be deepened for five miles up from the pier heads. Immense quantities of rubbish are being removed to enable more shipbuilding yards and factories to be built, and added to those already in existence. The principal manufactures, in addition to the building of ships, are bottle works, flint glass works, and anchors and chains, &c., for ships. There are, of course, many of a minor nature, all incidental to a large port. But the place is more famous for its commerce than its manufactures. In this respect it resembles Liverpool. The imports and exports are of the usual variety, but have no special character amongst the "high duty" goods, so as to give the place a factitious reputation from a House of Commons point of view. The trade is an extensive general business, in addition to the staple—coal—and gives employment to a numerous, hardy, and independent population.

In concluding this article it may be interesting to mention that Sunderland has twice given a title to noble families, first, to Lord Scrope of Bolton by Charles I., June, 1827. He died without issue, and the title was then conferred on Lord Spencer. There was a third and fourth Earl; but now it is merged in the title of the Duke of Marlborough, who is

also Earl of Sunderland, and, by courtesy, allows it to be borne by his grandson. It would seem like deleting Hamlet to leave out Hudson in any notice of his favourite port. It was the great "Railway King" that first promoted her docks, and here, after all his vicissitudes and misfortunes, he returned to die. Not, however, before the generous friends of his earlier years had raised sufficient to be a guarantee against poverty and despair. Here, too, the brave Havelock, scion of a warrior race, claimed the rights of citizenship. In grateful memory to his manes, his brother burgesses have erected a monument in their park, where, like that of Collingwood, at Tynemouth, the statue rises conspicuously, and seems to frown on the restless waters of the German Ocean.

Sunderland has the reputation of being one of the best regulated ports in the kingdom, so far as the management of the seafaring classes is concerned. A very large contingent is furnished to the Naval Reserve Force, and hence, for the public weal, ought to be an example to other ports to go and do likewise.

The next notice will be that of Glasgow and the Clyde ports.

COAST FOG-SIGNALS.

A RETURN has been presented to Parliament of the number, description, and cost of the various coast fog-signals in operation in the United Kingdom, together with a copy of the report made by a committee of the Elder Brethren of the Trinity House, who recently visited Canada and North America with the object of examining the subject of fog-signals.

An analysis of the first part of the return shows that the signals in use consist of bells, guns, horns blown by steam power, and gongs. There are, in all, thirty-one fog-bells at the most exposed light-house stations, four 18-pounder guns placed on dangerous headlands, seven horns or trumpets worked by steam, and gongs are in general use on board light-ships. Whistles do not appear to be used as fog-signals in this country. It is noticeable also that the element of distinctiveness in the various signals has of late years been growing in importance, probably because of the gradually increasing number of the signals. The bell, gun, and horn are in themselves sufficiently different to prevent their being mistaken one for another, but thirty-one bells ought not to be sounded alike, especially when the distances between them are not great. The four guns, however, are placed at sufficient distances to obviate any fear of their being mistaken, but the seven horns must be rendered individually distinct, because some of them are very near each other, and because it

seems probable that more signals of this kind will ere long be established. With bells and horns the distinctive element consists in the variation of the number and length of sounds and intervals of silence, and considerable care is apparently taken to ensure a marked difference between signals at all near to one another. It will at once be seen that this is a most important consideration for the mariner, and the progressive action of the lighthouse authorities in this respect ought to be acknowledged, for the distinctive characteristics of lights invisible in thick weather may be conveyed to the sailor by means of these distinctive sound signals.

As regards the fog-horns, we observe that various plans are adopted for projecting the sound in the direction required, the mouths of the horns being made moveable, and turned in any direction required. But it occurs to us, where the sound has to be simultaneously distributed all round, as in a light ship a steam-whistle would be much better than a horn rotating on its vertical axis. We are not aware of any practical objections to the use of whistles, and it is a little surprising not to meet with one of them in such a return as the present. With regard to the second part of the Parliamentary return—viz., the Report of the Elder Brethren of the Trinity House (consisting of Sir Frederick Arrow, the Deputy-Master, and Captain Sydney Webb) who visited Canada and North America, we may justly say it is a work of considerable interest and importance. In addition to much information about fog-signals, it gives an insight into the lighthouse management of the Dominion, and also of the United States, concerning which we think the following extracts may not be unacceptable to our readers :—

"The Canadian system is one of simplicity and economy; there is no Lighthouse Board nor any professional advisers save an engineer, whose time is very much taken up in other public employments; the administrative and executive duties rest entirely on the Minister of the Marine and his officers, and they prefer to employ simple and easily managed apparatus rather than use scientific arrangements requiring careful adjustment or attention. Relying on their own natural products of mineral oil, and wood, they use the former as their illuminating agent, and the latter as the material for constructing their lighthouses. Their buildings appear to be easily and quickly erected at small cost; the mineral oil is a powerful illuminant, requiring little care in management in catoptric lights, and is inexpensive; moreover, as our experiments show, a higher ratio of illuminating power is obtained from mineral oil in catoptric lights than in any other arrangement. Such a system seems admirably adapted for a young country. Good in itself, the source of light does not require the undivided attention of the keepers, which it would be impossible to secure, both by reason of the habits of the class of people who are employed,

and the impossibility of paying such high wages as would be demanded for skilled and special care.

"The lights we saw at various times were well kept, and we are told there are very few complaints, though they sometimes 'get a little dim towards morning,' according to one of the pilots of the St. Lawrence river-boat. There are but few exceptions to the catoptric system, and there is consequently little liability to error in fixing or exhibiting the lights. The Canadian authorities are rapidly increasing the number of their lights, and in the course of a few years they will have supplied a great extent of sea, river, and lake shores with them, if they progress with the commendable zeal which characterises them at present. It will then be time enough to think of scientific refinements, at present they would be incompatible with the finances of the country or the habits of the people. It must also be remembered that for nearly one-half of the year the greater portion of the Dominion lights are discontinued."

"Turning now to the system of the United States, a very different aspect presents itself. The lighthouse authority is a Board composed of engineer and naval officers, with a scientific gentleman at their head, and a secretary of each of the two executive branches, each of whom is also a member of the Board. In theory it is excellent, and it does not seem possible to devise a more perfect arrangement; but the results produced are not better than those attained by the system of Canada, nor than our own. The system of lighting is chiefly dioptric; but the modes of utilising the rearward light where possible, of covering dangers with coloured sectors, of directing and condensing the light in the most efficient manner, of giving light the normal direction due to its height, are not, so far as we could learn, adopted. The effects of obstruction from any part of the apparatus, or of coincidence between it and the lantern, are not taken into consideration, the common diagonal framed lantern has been discarded as a waste of glass, and the use of the old vertical astragals resumed. A noticeable incongruity (to our eyes) in the American lighthouses is the general want of cleanliness and care in the internal arrangements; the apparatus we mostly found clean, well kept, and true in focal position and level; and it was difficult to understand how this was kept so, while their oil-vessels and appliances were dirty and untidy, and rust and want of paint were commonly met with. This is, no doubt, attributable, in great measure, to the mode of appointment of the keepers, and perhaps partly to the character of the people, who pride themselves on being able to turn their hands to anything, and have no hesitation in changing their trade or occupation. Essentially practical, they will give all their energies to accomplish a result, but are quite indifferent as to the accessories. There are abundant regulations drawn up by Admiral Thornton Jenkins, the late exceedingly able Naval

Secretary, now holding a high command, but many of them seem to be habitually disregarded."

"Looking at their lights, from seaward, at night, they appear to be good, though in brilliancy they do not seem to equal those of Canada, owing, probably, to the illuminant being lard-oil, of which the photogenic strength is said to be only eight candles per argand burner. If so, the lights are doubtless inferior; but we were told, on the authority of Mr. Funck, the foreman lamp-maker before referred to, that at the last delivery of this oil the samples were tried and the argand found equivalent to twelve candles, also that a higher standard will be insisted on in future contracts. The Lighthouse Board are very partial to this source of light, which possesses some good qualities and some serious drawbacks. It is very clean, very pure, does not deteriorate, but rather improves with age; does not char the wick to any appreciable extent, requires no trimming, and therefore little watching; is pleasant to burn, and, above all, is perfectly safe. But it congeals at a high temperature, 44 degrees of Fahrenheit, and is expensive. The American Board are entirely opposed to the use of mineral oil; they have as good an illuminant as they require, and they do not consider that the question of expense is to be weighed for a moment against that of safety. On their own vast extent of coast-line they must be their own carriers, and in this they see the prospect of a danger they do not desire to encounter."

We also learn why fog signals are so much more extensively used in America than with us. The report says:—

"For a considerable portion of the year on their Atlantic, as well as on their Pacific, coasts, as far down as the 34th parallel of latitude, fogs are very prevalent from well-known causes. These coasts are frequented by a very large sailing and steam coasting trade, the most valuable articles and all passenger traffic being conveyed by the latter. In addition to the external shore there is an internal line of coast formed by inland waters connecting with all the eastern rivers, the whole extent of which is so protected and safe that, except when impeded in the North by ice, it is in constant use. From the Bay of Fundy to below Cape Hatteras there is a chain of such internal waters only broken between the southern limit of Casco Bay and the outlying promontory ending in Cape Cod, in which comparatively smooth water is found, where the traffic is very considerable, and vessels, particularly steamers, are always running at high speed. For these vessels to stop frequently and for long intervals on account of fog would be a serious inconvenience and loss; time must be kept, on the now well-established axiom that time is money, and it has become the common practice to run on in spite of fog. Such being the actual state of things, obviously the thing to be done is to

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endeavour to guard against its evil consequences, and hence the necessity for and multiplication of fog-signals."

Further on we are informed of some of the results obtained:—

"In our trials and experiments several points were, we think, clearly established—viz. (1), that up wind the reach of sound is very limited, diminishing with the increase of force of wind, while very little obstructs it altogether; (2) that sound travels equally as far when projected across as down the wind, if not farther; (3) that sound is sometimes strangely deflected according to some unknown law, as it was frequently observed to be stronger at a greater distance than in the intermediate range; but upon this point Professor Henry proposes to make particular investigation; (4) that the listener is assisted by standing in front of a flat surface of wood, intercepting the sound, and causing it to reverberate to the ear; and (5) that the sounds of the air-trumpet, of the steam Siren, and of the steam-whistle (all pitched at a low note, as found from experience the best adapted for carrying sound furthest) differ so little, that the mariner at sea, just getting within range of the sound of one of these signals, would be entirely unable to decide which instrument he heard; and that even at a very short distance, say 1½ to 2 miles, unless the motive power of the signal be considerably above the average of that used for ordinary signals, none but the most experienced and careful observers can do so. It follows, therefore, that for purposes of distinction the nature of the instrument itself cannot *alone* be relied on, and that the only trustworthy guides are distinctive variations in the number and length of blasts and intervals."

We are glad to observe that the report concludes with some practical recommendations as to the use of whistles as well as horns, and as to the further development of the fog-signal system in this country. It is probable that Mr. Beazeley (who recently made some stir about fog-signals) and the nautical community generally will welcome this report, and the evidence it gives, that something is being done in a matter of so much importance to navigation. We are informed that the Trinity Board are about to make some extensive experiments with various fog-signals, and it may be, therefore, that the recent agitation on the subject has not been altogether without effect in giving an impetus to the development of signalling in fog.

We have to record that on the 29th March, died Paymaster Francis Lean, R.N., the esteemed and valued secretary of the Shipwrecked Fishermen and Mariners Royal Benevolent Society.

CAPTAIN MAURY, LL.D.

In Captain Matthew Fontaine Maury, whose death, which took place at the College at Lexington, Virginia, on the 1st February last, we regret to record, the United States have lost a distinguished astronomer and hydrographer, and one who, by his indefatigable exertions and researches, into a branch of science before comparatively little investigated, has rendered the most important and valuable services to the world at large. To not a few of our readers, doubtless, Captain Maury's works are as familiar as "household words," and we feel sure that the following brief sketch of his life and works will be perused with interest, especially by those who have the objects of extended science at heart.

Born in Spottsylvania, Virginia (the State of Washington and Jefferson), in the year 1806, he was the son of parents in a moderate station of life, who, with a family of nine children, could only betow upon him a plain education. At nineteen he entered the United States' Navy, and within the short space of three or four years began his "Treatise on Navigation," a work which for an officer of his rank and short standing in the service, exhibited no ordinary talent and ability, and one which has since been recognised as a standard work on the subject, and is now extensively used as a text-book. He was not, however, destined to take an active part in the Naval Service for a very lengthened period, for, in 1839, he met with an accident which resulted in permanent lameness, and entirely disabled him for active service. During these fourteen years afloat, he had made several voyages, and had acquired the requisite practical knowledge and experience to fit him for his future position. His first appointment in the Navy, in 1825, was to the *Brandywine*, as midshipman, at that time fitting out to convey General Lafayette to France. In the following year the vessel returned to the United States, and he made another voyage in her to the Pacific, where he was transferred to the sloop *Vincennes*. In this vessel Maury circumnavigated the globe, and, after a short visit to his native land, on the expiration of his cruise of four years, he again proceeded to the Pacific, as master of the *Falmouth*, from which vessel he was promoted to the rank of acting-lieutenant in the frigate *Potomac*, and, in 1836, subsequently to the return of the *Potomac* to the United States, received his appointment as lieutenant. About the same time he was appointed astronomer to the South Sea Exploring Expedition, under Commander T. Ap-Catesby Jones, an office which he resigned when that gentleman gave up the command of the expedition.

On his retirement from the Navy, Lieutenant Maury was placed in charge of the depôt of charts and instruments at Washington. This

institution, at the time of his appointment, one of comparative insignificance, was, in 1844, incorporated with the National Observatory—Lieutenant Maury becoming the superintendent of the united institutions which, under his supervision, in a few years, acquired considerable importance in the scientific world.

Maury, who was always a man of studious habits, with great powers of application, had, previously to this period, begun a series of investigations into what has been termed the "physical geography of the sea." With a great amount of perseverance and labour he had collected, from such log-books as could be obtained, much valuable information relative to ocean currents, winds, &c., and from this he constructed the first wind and current chart of the Atlantic. Continuing his unflagging exertions, he worked hard at his post, proposing scheme after scheme, and compiling valuable returns from the then existing data, which, however, were felt to be wholly insufficient and inadequate to meet the requirements for which they were intended. Eventually, great interest having been excited by the startling proposals and conclusions of Lieut. Maury, a Maritime Conference was proposed, and held at Brussells, in 1853, which recommended the keeping of an abstract form of log on sea-going vessels, for meteorological and other scientific purposes. This proposal was almost universally adopted, and it has been the means of throwing much new light on the science of meteorology, and of raising the art of navigation from the "Slough of Despond" in which it was formerly plunged into one of the first sciences of our time.

Shortly after this Maury produced, in England, his work entitled "The Physical Geography of the Sea," which excited still further interest in the subject of winds and currents, and which contained much of what he had previously so laboriously collected. The book was received with every mark of popularity, and was subsequently translated into several languages; honours from the principal societies and learned bodies in the civilised world being conferred upon the author, among others the degree of LL.D. of the University of Cambridge.

When the project of laying a telegraphic cable across the Atlantic was under consideration, Lieutenant Maury, on being consulted by Mr. Cyrus Field as to its practicability, gave it as his opinion, derived from the results of previous deep-sea soundings, that there was, between Newfoundland and Ireland, a plateau which appeared to have been placed there for the express purpose of holding the wires and keeping them out of harm's way. It was, he asserted, so deep that, when once landed, the cables would remain for ever beyond the reach of vessels' anchors, icebergs, and drift of any kind, and so shallow that the wires might be readily lodged upon the bottom. How correct he was in these conclusions, subsequent experience has proved beyond the shadow of a doubt.

Appointed Commander in 1855, Maury continued his labours with undiminished ardour and devotion until the breaking out of the great civil war, when, in 1866, on the secession of his native State, he threw up all his appointments under the Federal Government. In the following year he came to Europe, and was offered appointments by both the Russian and French Governments, which, however, he did not accept, and shortly after he proceeded to Mexico, at the invitation of the Emperor Maximilian. In 1864, Maury visited London, where he was entertained at a grand banquet, at which representatives from all the different countries were present, and where he remained until his return to America, in 1868, to take up the position which he held until his death, as Professor of Physics and Astronomical Geography at the Lexington College, Virginia. From this time he appears to have devoted himself as unremittingly as in his younger days to his favourite science, and he has compiled and published most valuable statistics as to the geography and resources of his native State. His last endeavours were to organise a system of obtaining combined meteorological telegraphic weather and crop reports, in the hope that by means of the information thus procured, he would be able to benefit the agriculturist as he had already done those who devote their lives to ploughing the sea instead of the land.

In the midst of his useful and devoted labours he was taken away, deeply and sincerely mourned by a large circle of friends and fellow-workers. We have, of course, only been able to take a very brief glance at a few of the benefits that Captain Maury has conferred upon the age in which he lived. Who can tell the harvest of the seed he has sown? We believe that even yet, with all the light that has been thrown upon them, the sciences to which Captain Maury devoted his whole life and energies are only in their infancy, and that there is ample room for many such men to take up the cause where he has left it, and leave to posterity a name equally famous. We cannot close without reproducing the undeniable testimony borne to Maury's worth and greatness by one of his most intimate friends and admirers. Captain Jansen, of the Royal Dutch Navy, who, in a memoir which appeared in a contemporary, "Ocean Highways," for last month, and to which we are indebted for some of the particulars which we have given, says:—"Who can estimate the nature and amount of anxious toil by day and by night which these grand discoveries cost? The mind is bewildered when it attempts to grasp the field of research spread before it in the graphic description which Maury gives of his investigations into the phenomena of the sea, and the process by which he unfolds the orography of the deep, the chart of the ocean bed, the limits of the currents and counter currents of the sea, the repose which reigns in its great depths, and then presents, with the assurance of certainty, the solution of the

great problems involved in ocean telegraphy. Genius grasping instinctively after unknown truth, and pursuing it for its own sake, finds no higher reward than that which flows from the demonstrated proof that what had before seemed visionary and ideal, is now clearly revealed as another of those Divine laws which are destined in the hand of science to be a blessing to the world. Familiarity with those blessings make us forget the source whence they spring. But for all who have known how scanty our supply was of that knowledge by which the sailor had to bring his ship around the world, before Maury had thrown such an amount of light over the great mysteries of the ocean and the atmosphere, his name will be indissolubly associated with the triumphs of modern science, and its application to useful purposes."

LIFEBOATS.

Is it better to construct lifeboats in such a manner that they may upset readily, or is it better to construct them with lateral stability sufficient to prevent them from upsetting? This is a somewhat grotesque way of putting an important question. To answer it shortly we may reply that there are some experts who act on the principle that it is better to have lifeboats that *will* turn over;—and that there are other experts who say it is better to have lifeboats that will *not* turn over. The Royal National Lifeboat Institution have lifeboats whose fundamental principle of construction is, that they shall "self right." The Coast-guard stations, on the contrary, are provided with lifeboats whose fundamental principle is that they shall not turn over. The struggle between the "turn overs" and the "uprights," as separate classes of experts, is as strong and as fierce as the struggle some time since related as having taken place between the "big-endians" and the "little-endians." At the present moment, in Great Britain, the "turnovers" have the best of it with the public; and it is precisely because they have the best of it with the public that we think the subject is worth consideration. "Is not this Great Babylon that I have builded?" was some years ago asked by an important and admiring egotist. "Is not this the Great Lifeboat Institution that we have nurtured, sustained, and developed?" may equally well be asked by the Board of Trade and the Committee of the Royal National Lifeboat Institution, and they may ask further, "are not these 'turnovers' our idols, and the creatures of our imaginations; and are they not really our handicraft?" The answer must be in the affirmative. The Board of Trade, by payments out of the Mercantile

Marine Fund, placed the Lifeboat Institution on a sure basis when it was struggling and in want, and the Institution has in its turn educated our seafaring population to endure the "turnover" pattern of lifeboat. The proceeding of the Institution in this matter is at once patriotic and logical. Patriotic, because it has inured Britain's sons to danger, and logical, as the following line of argument will show—viz., first, some boats are more liable to be upset than others are; some boats cannot be upset without great difficulty; other boats can be upset easily. But as all boats *can* be upset, it is proper to assume that all boats *will* be upset; and having assumed that all boats *will* be upset, it is logical to assume that all boats must be self-righting. Now (as every one knows) just in proportion to the increase of her qualities as a "self-righter," a boat becomes less and less stable laterally, and the less stable she becomes laterally, the more certain is she to capsize, and the more certain she is to capsize the more necessity is there that she shall "self-right;" and so it happens that between capsizing and self-righting we have come to possess a fleet of "turnovers."

It is not very long ago the newspapers contained an amusing account that the Board of Trade presented to the town of Calais a lifeboat, and, in the belief that they were going to the best shop for the required article, that Board purchased, or had built, a splendid "turnover." It was presented in state; but the Frenchmen, ignorant as they generally are in the matter of boats, would not have it at a gift. They looked on that particular boat as a trap to catch the unwary and confiding mariner; and we heard one of the burgesses pertinently remark in effect that, "It is very beudiful dis self-righteousness in a boat, but we do not want him. We want a boat dat will not upset himself, and not one dat will upset and den self-right wis see most charmant of efficiency. No; we tank see Board of Trade, but nevare, nevare will we have such beautiful a contrivance." And as they would not have it, an "uprighter" had to be built, and sent to that ungrateful town of Calais, in lieu of the splendid, but rejected, "turnover."

Those of the public who are infected with the "inspection" *virus*, will inevitably be demanding a survey of lifeboats. The working man of an inland town may reasonably ask, why should his brother working man at the sea-side be allowed to go to sea in a "turnover," any more than in a "coffin," leaving his widow and children a desolate hearth; and if it comes to that, he may ask further, why should any working man be *allowed* to risk his valuable life in any lifeboat at all? If no ship is to be permitted to go to sea except under conditions of load line and stability, and stowage: conditions to be settled by the Legislature, surely "turnover" and other lifeboats ought not to be allowed to put to sea in bad weather, and thereby to risk the life of poor Jack or of any other

son of toil. If lifeboats are to be allowed to put to sea on the plea that the men who man them know the risk they incur, and still incur it willingly, then the same argument must be applied to all our ships, of which the crews possess the like knowledge of the ship, cargo, draft of water, and service. This is rather an awkward nut for the humanitarians. Is the nation to say to a man, "You fully know the risk you are about to incur, but you *shall* not incur it." If the nation is not to say this in the case of a "turnover," or of a salvage smack, on what principle shall she say it in the case of those innumerable coasting craft, where the men also do know the risk incurred, and still wish to incur it?

But to return to our subject, as regards the "turnovers," the last failure we have heard of is at Balbriggan Skerries, where we are told that the boat turned over not once, or twice, but three times, and that six out of eight of the crew were drowned. Here was desolation: and the loss was preventible, for the lifeboat, on humanitarian logic, ought not to have put to sea. There has been no inquiry by any public department, the papers have been wonderfully dumb, and the "turnover" is, so far as we are aware, at Balbriggan Skerries, still ready for another crew.

According to the report of the Institution, it appears that the *lifeboat* stationed at Skerries, county Dublin, on the night of the 1st February last, proceeded through the darkness to the aid of the crew of a vessel wrecked on the rocky shore near Balbriggan. The lifeboat ran down under sail, but before getting into broken water near the lee shore, took in her sails and proceeded through it towards the spot where the wreck was supposed to be, but on account of the broken character of the water, which commonly prevails on a rocky shore, some of the oars were wrenched from the hands of the crew and broken or lost, and it being then impossible to retain any command over the boat she was anchored. She then safely rode for about an hour admist the heavy surf, when the force of the tide setting her broadside to the waves a heavy broken sea upset her, carrying seven of her crew away. One of these, the coxswain, succeeded in regaining her, and was helped into her again by the three men who had remained in her, she fortunately being a self-righting boat. A second time, after an interval of several minutes, she was upset, when again three men went round in her, and the fourth, supported by his lifebelt, swam to the shore. The cable was then let go, and turning athwart the sea a third time, she was again upset; one man was then thrown from her, but his comrades, after this fearful ordeal, being too exhausted to help him into her again, he was secured by a line to her side, and the boat was rapidly carried to the shore without further loss of life.

The coastguard service is not supplied with "turnovers," but with

"uprights." The public may, no doubt, like to know why the "poor fisherman" is sent afloat in a "turnover," whilst the coastguardman is sent afloat in a stable boat of a less peculiar construction. Why is "poor" Jack not provided with the same sort of lifeboat as his brother Jack in the navy? Here, then, is a case for humanitarians. After all it may, however, turn out that the Institution is right in the main, and is, probably, only desirous of an opportunity for letting the public know of the conditions on which and reasons by which their committee have been guided in selecting "turnovers" in preference to "uprights." That the Admiralty and the Institution can both be right, and yet that the two bodies at the same time supply boats essentially different as lifeboats for the same districts, is undoubtedly possible. We should, however, like to hear a good deal more about this last "turnover" casualty and its causes. As regards the "uprights," the following extract from Capt. Sulivan's last work on "Chasing Slave Dhows" is instructive and confirmatory:—

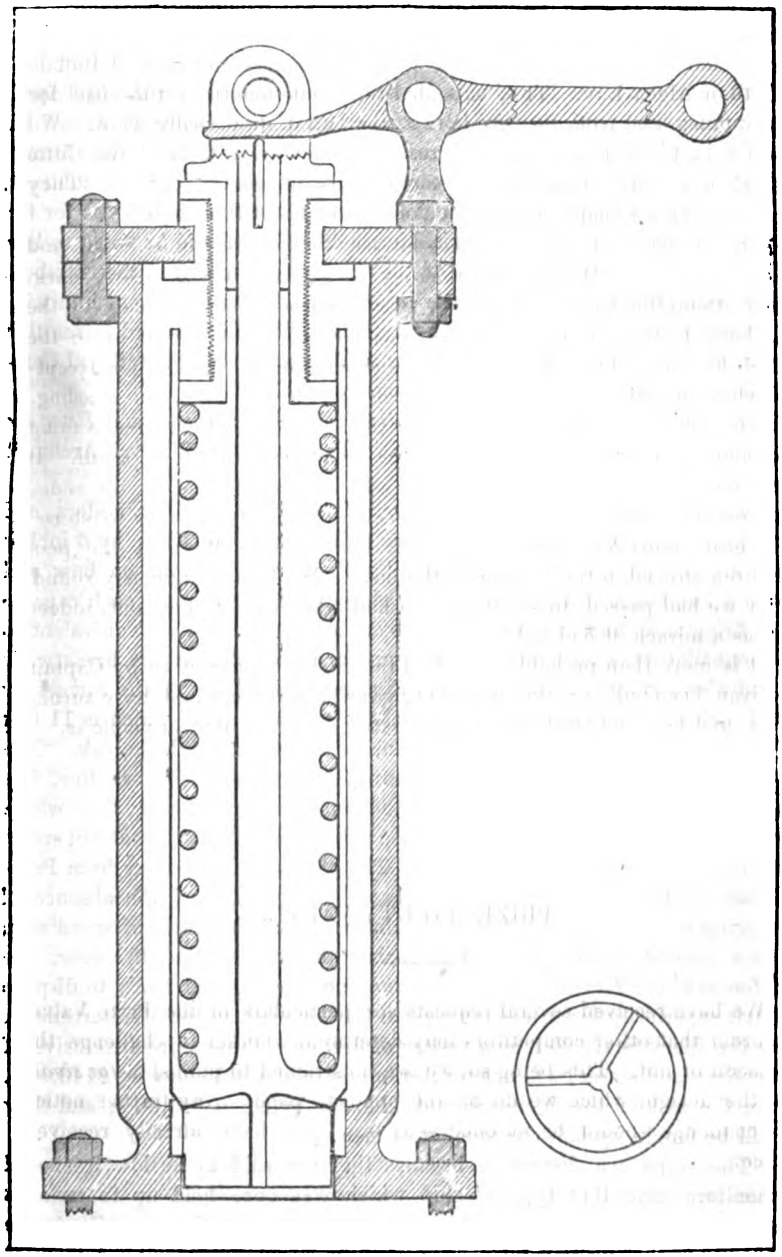
"On the afternoon of the 28th of the same month a dhow appeared coming from the southward, so we immediately weighed and steamed towards her. It may here be remarked, that owing to the strong current from the south and light winds, the dhows, which are never calculated to sail on a wind, have no chance of an escape from a vessel north of them. On nearing this dhow, which was running up towards us, close in shore, she put her helm up, and ran through the breakers on to the beach, becoming a complete wreck in a few minutes. We were close to her, though outside the breakers, and in time to see a crowd of unfortunate slaves struggling through the water from the ship to the shore. Many of them, no doubt, were drowned in the attempt, and others escaped up the hill before our boat could get near the shore. It was a question if the danger was not too great to risk the surf in the attempt to rescue any of them. We lowered the lifeboat, one of White's five-oared, Mr. Breen, midshipman, and Richards, carpenter, slipping down the life lines into the boat with me, and we shoved off. I intended, if the bar appeared too dangerous to cross, not to risk the lives of the crew; and I confess, after my experience, I never would allow a boat to attempt it again on this part of the coast; it did not look so bad outside. We gave way, and at this time we could see many of the slaves on the beach and in the water. Suddenly we found ourselves amongst the breakers. A sea struck us abaft, and washed clean over the boat from stem to stern; and she must have broached-to if it had not been for the weight of two of us on the yoke line. Then another sea struck us, and then another, washing over the whole length of the boat, and every one in it; but, owing to her admirable construction, the seas went out over the bows, leaving only a few inches of water in her. In a few

minutes we were over the bar, and inside it was comparatively smooth. But how was it possible ever to get out again, was the first thought that struck me, as I never saw worse looking breakers, not even at Buffalo Mouth or Algoa Bay. They extended the whole length of the coast for many miles, and from the inside we saw what they really were. We were too late to rescue many slaves; we, however, found seven little wretched children from five to eight years of age. * * * They were a week on board before they could stretch out their legs. * * * When we were shoving off, the natives (Somallies) came down and fired. * * * We had still to cross the bar, and it was nearly dark. After attempting to cross it once or twice, and being carried back by the breakers, I thought, as we were armed, of hauling the boat on to the beach for the night, as there was no anchoring inside the bar, for excepting close to it there was only a white sheet of foam, which, on receding, left the boat nearly high and dry on the coral. At last, after waiting for about a quarter of an hour longer, there appeared to be a lull. It was now or never; the crew gave way with a will, and we succeeded in crossing, getting only one heavy breaker over us from stem to stern; the boat, however, going through it like a fish. We had the poor children stowed in the bottom of the boat. We looked anxiously round, after we had passed, to see if the sea had taken one of them out, indeed it was a miracle it had not."

It is more than probable that had the lifeboat referred to by Captain Sulivan been built on the self-righting principle she would have turned over, and have satisfactorily demonstrated how good that principle is.

PRIZE SAFETY-VALVE.

We have received several requests for particulars of the Prize Valve, in order that other competitors may determine whether to challenge the decision or not. This being so, we are constrained to publish a *fac simile* of the design, which we do on the opposite page. Any further notice of challenge should be at once sent in. We have already received three.



INSTITUTION OF NAVAL ARCHITECTS.

THE fourteenth session of this Institution commenced on the 3rd April, at noon; the meetings were held in the hall of the Society of Arts. Sir John S. Pakington, M.P., the President, after the Report of the Council had been read by the Hon. Secretary, delivered the opening address. We are glad to see that, in consideration of the valuable services for ten years of the Hon. Secretary, Mr. Merrifield, £200 should be voted to him by the Council from the funds of the Institution, and that the members and associates be invited to enter into a subscription to present him with a testimonial in a more permanent form. We are also glad to see that Mr. Merrifield has been honoured by an appointment on the Royal Commission about to inquire into the construction of ships.

A paper was read on the *Devastation*, *Thunderer*, *Fury*, and *Peter the Great*, by N. Barnaby, Esq., Vice-President and Chief Naval Architect of the Royal Navy.

The *Devastation* and the *Thunderer*. Their hulls, engines, boilers, and magazines are protected by 12 inches of armour on the sides, by 3 inches of armour on the low decks, and by 6 inches of armour on bow and stern bulkheads in the hold. Each ship carries four guns, each capable of firing shell and shot weighing 700 lbs. each, at a velocity equivalent to about 900 miles an hour. These guns are protected at the breastwork and above it by at least 12 inches of armour, the faces of the turrets by 14 inches. The deck forming the glacis to these guns, which is 11 feet out of the water, is protected by 2 inches of iron beneath the oak. The trial of one of the ships at the measured mile, at her deep sea line, has shown that she has a speed of one and one-third knots over that which was estimated (13·840); and that she will reverse the course at full speed in one minute twenty-six seconds. The passage of the other from Pembroke to Portsmouth has shown that the low hull and the absence of rigging are likely to admit of the maintenance of high rates of speed with ease against head winds. Comparing them with the *Minotaur*, the *Monarch*, the *Hercules*, or the *Sultan*, no one here is likely to dispute their superiority for an engagement in the Channel, in the Mediterranean, or the Black Sea. Yet, as a matter of first cost, these ships (exclusive of artillery and stores) will not reach the cost of the *Minotaur* by £140,000, nor the cost of the *Monarch* and *Hercules* by some £40,000; and they will be fought by half the number of men.

The ships are distrusted because they are said to be low freeboard monitors; and that type of ship which was once held up to us as a pattern of all that was admirable, is now out of favour. Well, the answer is, they are not low freeboard ships or monitors at all. A monitor

is a vessel which, with about 1,600 tons of bulk under water, has about 150 tons, or less than one-tenth out of water. A low freeboardship, such as the far-famed *Miantonomah*, has from 2 to 3 feet freeboard, right fore-and-aft; and with a bulk of about 4,000 tons under water, has about 1,000 tons out of water, or about one-fourth. Yet of these ships, we were told in this room, seven years ago, that when a heavy gale came on just after the American fleet had assembled for the bombardment of Fort Fisher, the monitors (with an out-of-water bulk one-tenth of their under-water bulk) rode out the gale quite as well as the broadside vessels, and were the only vessels in the fleet which did not drag their anchors. We were told with regard to the larger vessels with, from 2 to 3 feet freeboard, that one of them got into a very heavy and confused sea, with the waves 30 feet high. Referring to this occasion, Commodore Rogers said, we were then informed:—"During the heaviest of the gale I stood upon the turret, and admired the behaviour of the vessel. She rose and fell to the waves, and I concluded then that the monitor form had great sea-going qualities." This being so, there can surely be no just ground for alarm on account of lowness of freeboard, when the bulk of out-of-water ship is not one-tenth, or even one-fourth, but is nearly one-half of the under-water ship; and this is the case in the *Thunderer* and *Devastation*. To confirm us on this point, we have the case of the *Abyssinia* and *Magdala* turret-ships, which made the passage to Bombay in the winter of 1870-71. In them the bulk of out-of-water ship was only one-third of that under water; and the height of freeboard was only 3½ feet in one ship and 2½ feet in the other right fore and aft. I may refer you also to the rule as to freeboard adopted by the Council of this Institution in 1867, according to which the *Devastation* should have 7 feet 9½ freeboard. These ships will have 20½ inches more than this for their average freeboard; and there will not be one single opening at this height, or even at twice this height. The lowest openings are, in fact, 24½ feet out of the water. But there is low freeboard, it will be said, in part of the ship; there is a part of the stern which is only 4 feet 6 inches out of water! Quite true; and what of that? It is hermetically sealed with armour of 3 inches thick; and if, instead of 4½ feet it were 4½ inches, I cannot imagine why it should be objected to. No one will be asked to go there when the ship is at sea; and although it looks odd to see a part of the deck of the ship converted into a breakwater, it is a very innocent, if it should not prove to be (as I believe it will) a very useful novelty.

The ship cannot be forced under the sea bodily; one-third of her whole bulk will insist on remaining above the water so long as water does not enter the openings above the hurricane deck. Any depression of the bow must, therefore, be accompanied by a corresponding eleva-

tion of stern, until the screws come out of water, and the ship stands up on end. The very statement of the case shows, it seems to me, how groundless the fear is. Let us look for a moment at this matter of the stability transversely and longitudinally. It is to be borne in mind that the transverse stability of the ship as originally designed was calculated by us up to maximum and vanishing, for the information of the Committee of Design, and was accepted by them as sufficient to ensure the safety of the ship at sea. On the assumption that the metacentric height was 4 feet 4 inches, as had been estimated when the ship was designed, we ascertained that the maximum stability would have been at 20°, and would have been 7430 foot tons in amount, and that the stability would have vanished at 43½°. I need, therefore, hardly say that, with the maximum at 28°, instead of 20°, and the amount over 14,000 foot tons, as it now is at the deep draught, instead of 7430 foot tons, the transverse stability of the ship may be considered to be satisfactory. But the stability endwise is enormously greater. The height of the metacentre above the centre of gravity is in these ships no less than 247 feet, and the stability or righting power at intermediate positions lies between the two, that in the transverse position, of which I have given the measure, being the least of all. I think it is not possible to foretell precisely what the action of the waves may be with this great stability, a comparatively low forecastle, and a very low piece of after deck. This can only be ascertained by cautious and careful trial. That the trial may be made without any danger may, I think, be confidently inferred, apart from theoretical considerations, from the behaviour, so far as pitching is concerned, of the *Monadnock* and *Miantonomah*. The former of these ships, it will be remembered, was navigated round Cape Horn to California without receiving any assistance on the passage from her consort. Commodore Rogers reported on the 28th of June, 1866, that in a gale off Point Conception on the Coast of California, two successive waves rose which interposed between his eyes (he being in the *Vanderbildt*), and the masthead light of the *Monadnock*. He found, upon inquiring, that the light was 75 feet above the water and his eye about 25 feet. In this sea, according to the testimony of her officers, she was very easy. Of the *Miantonomah*, on her passage to England, it was officially reported that, "when head to the sea she takes in about 4 feet of solid water, which is broken as it sweeps along the deck, and after reaching the turret it is too much spent" to interfere with the firing of the guns right a-head. "When stern to the sea, the water which comes on board is broken up in the same manner as when going head to it." These then are the chief points affecting the behaviour of the *Devastation* and the *Thunderer* at sea, so far as can be foreseen, and I see no way in which they can be rendered more secure than they have been made. So far as our know-

ledge and skill extend, every element of danger in the vessels' structures has been exhaustively considered, and guarded against in the most careful manner.

The "Fury," as Re-designed.

The *Fury* differs from the *Thunderer* and *Devastation* in many ways. The differences may be briefly stated as follows:—The *Fury* will be faster (over 14 knots) and more thickly armoured (14 inches instead of 12 inches); she will have no central superstructure of thin iron, but an armoured tower coming out to the full breadth of the ship, and large enough to berth within it all the officers and crew; she will have only 3 foot freeboard for a portion of her length—viz., right forward and aft; she will have economical engines, by which we hope she will steam 6,000 miles with 200 tons less coal than the *Devastation* and *Thunderer;* her armour will be immersed somewhat more, and especially forward, and her engines and boilers will be cut off from each other by a fore-and-aft partition. If I add, that the cables work under instead of upon the forecastle, I shall have indicated the particulars in which the *Fury* is to differ from the first ships of the class. A special defect, in ships with low decks, is the difficulty in connection with the anchoring gear. In an exposed roadstead, in heavy weather, there would, I think, be considerable difficulty in weighing anchor in the *Thunderer* and *Devastation*. The difficulty has been reduced, as far as possible, by the best arrangements which we could devise; but it has not been wholly removed. In the *Fury* we have brought the cables in under, instead of upon, the forecastle; and, in order to prevent the water from flooding the forecastle-deck, we have extended a breakwater, about 20 feet long, in front of it.

"Peter the Great."

The *Peter the Great* is about 10 feet longer than the *Fury*, 329 feet 8 inches, and was 2 inches wider, but the *Fury* has been increased in breadth 12 inches, to 63 feet 10 inches, so that the *Peter the Great* is now 10 inches narrower. Her designed displacement is near 10,000 tons, and her indicated horse-power is expected to be 10,000. The *Fury* is to be 10,800 tons, with an indicated power of 8,000 only. If these expectations are fulfilled in both ships, the Russian ship will probably have the advantage in speed. She had, according to the original intention, the advantage in armour also, but that she will not now retain, as her armour does not exceed 14 inches in thickness, and there is no reason to suppose that the system of backing is better than our own. Her armament is to be four 700-pounder guns. The ship was originally designed to have a low freeboard amidships, like the original design of the three English ships, the breastwork being narrowed. But after the

changes made in the *Thunderer* and *Devastation*, by which this feature was got rid of, the *Peter the Great* was altered, and her breastwork brought out to the side. The general arrangements of the *Peter the Great*, above the water, may be said to be that her general height, form, and appearance, from her stem to abaft the after turret, will be like the *Devastation*, but that abaft this point there is a long stretch of very low deck, only 3 feet 7 inches out of the water. The unarmoured forecastle, 9 feet 4 inches out of the water, is to be used for the accommodation of the officers, as is also the breastwork and the fore-deck under the armour. The ship's company are to be under the armour aft. The seamen's head is at the extreme after end of the ship, approached by a flying bridge from the after part of the breastwork. The *Peter the Great* is a long way yet from completion, and the intentions of her designer may not be fully carried out. We cannot always do what we should like. I hope, for the sake of her able designer, that she may prove to be as good a ship as the *Fury*. I do not wish her to be better, and I do not think she will be better.

On the Load-draught of Steamers.

By W. Rundell, Esq., Associate.

Of late, public attention has been so powerfully directed to the subject of a load line in connection with the safety of our seamen, that a cry has been raised (I believe a most mistaken and injurious cry) for the interference of Government with the loading of ships, and fixing a deep load line, laden beyond which no vessel may be allowed to go to sea. This, in my opinion, is not a proper subject for discussion by the Institution of Naval Architects. The data for it lie outside the special experience of the naval architect, and must be gathered from experts. The immediate subject of my paper, on the contrary, appears to me especially well suited to your consideration; and I respectfully submit my suggestions to your criticism, in the hope that, if approved by you, the Government may be induced to speedily adopt them. With the strongest conviction that the load-draught of any particular ship should be left to the persons immediately concerned, and that none of these parties should be specially protected by the State in making his bargain or engagement, I believe that the Board of Trade might, with propriety, be called upon to assume the responsibility of making certain marks on a ship's side, to represent certain facts in precisely the same way in which the Board now superintends the correct marking of the scale of feet on a ship's bow and stern; the cutting of the official number on the beam at the main hatch, or the insertion of the ship's cubical capacity on her certificate of registry.

My first proposition is, that a portion of each side of every steamer

shall be marked with a scale of capacity; that this scale shall be obtained in a certain way, and marked in a certain position. My scale is one of proportion only, and it is proposed that it shall be painted, or otherwise permanently marked on the upper side, amidships, of all steamers. The marks would be 18 inches long, and placed 1 foot apart. On each line would be figures 6 inches in height, indicating *the percentage of the internal capacity of the vessel, which lies above it.* The scale would be placed on each side of the vessel, in a vertical line 1 foot abaft the middle vessel, "between the perpendiculars."

It would not be a long or tedious operation to measure the upper part of each ship specially for the purpose; but this is scarcely required, as the length, breadth, and details of tonnage are believed to be quite sufficient for the purpose. In my last paper the cubic contents in register tons of each horizontal slice, a foot in thickness, of that part of a loaded ship which is above water, was taken as equal to the registered length multiplied by the registered breadth, multiplied by ·8 and divided by 100. If the number of registered tons under tonnage-deck be divided by the number just obtained, the quotient will represent the number of feet of free-side which will lie above the 30 per cent. plane.

Having thus obtained the distance below the tonnage-deck of the 30 per cent. plane, the next step is to ascertain the percentage at each foot as measured from the datum-mark opposite the tonnage-deck. From a displacement scale, representing the mean of a number of vessels, a linear percentage scale was prepared, in which the intervals gradually increased as the vessel's capacity at the part represented on the scale decreased, and this was carried on by 1 per cent. at a time until it was extended to 40 per cent., has the utmost limit likely to be wanted. The other side of the scale is divided, so that the distance from 0 to 30 shall represent 1,000 equal parts. It is to be used in the foregoing manner.

Divide 1,000 by the number of feet and parts representing the free-side for 30 per cent. of internal capacity: the quotient will indicate on the scale the percentage at the 1-foot mark, twice the quotient will indicate the percentage at the 2-foot mark, three times at the 3-foot mark, &c., &c., up to 40 per cent., if wanted.

For example, let the vessel be 1,000 tons under tonnage-deck; length, 200 feet; breadth, 30 feet—

$$\frac{1{,}000 \times \cdot 3}{\frac{200 \times 30 \times \cdot 8}{100}} = \frac{300}{48} = 6\tfrac{1}{4} \text{ feet for free-side to represent 30 per cent. of capacity.}$$

Next divide 1,000 parts on the scale by $6\frac{1}{4}$, and we obtain 160 as the scale number for the percentage which reads off 5·6 per cent., and the multiples of 160 for the successive marks 1 foot apart will give the following percentages:—11·0, 16·0, 20·6, 24·8, 29·0, 33·0, 36·8, 40·2.

Mr. Rundell then explains the allowances he proposes for sheer and

for erections above the tonnage-deck, 1-sixth of the mean sheer, and 1-fourth of the height of the awning-deck, and 1-fifth the mean height of other erections. By mean height he means their cubic capacity divided by the horizontal area of the vessel above the water-line.

The adoption of the above or any other reasonable allowance would not bind any one to a fixed load-line, and would reduce individual differences of opinion to a little space on one side or other of the customary percentage mark. Experience would soon show which percentage mark gave in practice the most satisfactory results.

The use of marks amidships, showing percentages of internal capacity, instead of the actual tonnage cut off above, has several advantages. 1. It does not require a knowledge of the details of the registered tonnage of the vessel before any idea can be formed of the proportion of the vessel's bulk which the figures indicate. With a scale showing tonnage, reference must be constantly had to the ship's register, while with a percentage scale the figures to be considered are those with which every one is familiar. 2. Such a percentage scale would tend to generalise our ideas as to safe load draught, and be of especial value in treating the draught of very long steamers, or vessels of other unusual proportions, by enabling us to compare them in similar terms. Lastly, if the Legislature should decide on fixing a deep load line beyond which no vessel should be loaded, it would enable them, instead of naming a rigid hard and fast line, to fix different percentage marks suited to the class, age, condition, and usual voyage of each vessel.

The paper was illustrated by diagrams, representing a portion of the midship section, and also ten feet in length of the top side of each of those vessels respectively, of 1000, 2000, and 3000 tons under deck. These are respectively marked with the following figures to show the percentage of the internal capacity of each vessel which lies above the line on which the figures stand :—

1. Steamer of 1000 Tons.	2. Steamer of 2000 Tons.	3. Steamer of 3000 Tons.
7·2	5·1	4·8
14·1	10·1	9·4
18·3	14·7	13·7
24·2	19·0	17·8
29·7	23·0	21·7
34·8	27·0	25·3
39·6	30·6	28·7
	34·2	32·2
	37·6	35·4
	40·8	38·6

On the Overloading of Steamers.

By J. Wigham Richardson, Esq., Associate.

This was a rambling paper on the Constitution of the Board of Trade, the Genius and Labours of the Shipbuilders and Engineers of Great Britain, Local Tribunals, Suez Canal Dues, Register Tonnage, Right Position of Stringers, Hints on Vessels for the Ore Trade, *ultra vires*, and Double Bottoms. It does contain the following to justify the heading:—As to the question of overloading steamers, this refers not only to loading a steamer too deeply, but generally to putting on board a cargo which is more than a steamer ought to carry. A draught of water safe enough in summer time may be dangerous in winter, or if safe for one voyage may be risky for another. Certain authorities have proposed a certain number of feet of side calculated from the depth of hold as a standard; but this is subject to the difficulties stated above, and does not take into account the length or model of the steamer.

An Investigation of Various Proposals for Fixing the Load-line of Vessels.

By E. Withy, Esq.

In considering the safety of ships, we should not look to their efficiency in fine, or even moderately rough weather, but they should have a fair margin to meet any contingency. I argue from this stand-point, and claim for the whole subject its right to be judged alone by a very high standard, as its issues are not ordinary commercial ones, but *human lives*. So far as I am aware, there have been only three principal proposals before the public for fixing the maximum load-line. They are—*First*, a certain proportion of the depth of hold; three inches to the foot being about the average. *Second*, the suggestion of the Committee of this Institution, in 1867, which is as follows:—"One-eighth of the beam is the minimum freeboard for ordinary sea-going ships of not more than five breadths to the length, and 1-32nd of the beam should further be added to the freeboard for each additional breadth in the length of the ship" (except in spar-decks, where the addition is unnecessary). And *third*, that the actual buoyancy of every ship should be calculated, and a percentage of the whole be kept above the load-line, as reserve buoyancy (30 per cent. having been several times suggested). The bill of the member for Derby, adopting the first proposal as its basis for fixing a maximum load-line, and the suggestion offered by the Committee of this Institution, are both open to grave objections.

The fact is that both proposals, the first largely and the second in a more moderate degree, offer a premium to the building of short, narrow,

and deep vessels with flat floors and generally full models with little sheer; in fact, they follow in the wake of the O M or B M tonnage (now fortunately nearly obsolete) which by taking as the measure of capacity an arbitrary compound of length of beam only, led to the building of many ships of very objectionable form and proportions. Shipbuilders will agree with me that the dearest method of increasing capacity is that of adding to the beam, the next to add to the length, and the cheapest of all to add to the depth, so that there is already quite sufficient inducement to build deep ships, and to restrict the beam.

In coming to the third proposal, I cannot help feeling that it is the only one that is worthy of being deliberately entertained, and I have a much higher opinion of it as a feasible solution of the whole question than I had before I commenced its more thorough investigation. I take 30 per cent. of the whole buoyancy as reserve, not as absolutely the right amount, but as intended to illustrate principles.

I am of opinion that an allowance can safely be made for the buoyancy of poops, bridge-houses, and forecastles, although it would be manifestly quite out of the question to do so with the majority of such erections now existing, because they certainly cannot lay claim to being buoyant spaces, unless their ends are built of the same scantling and strength as the sides, and the entrance to them is effected only from the top. I do not know, at present, of any ship thus built.

REASONS FOR.

I. There is undoubted value in erections of this class, on account of the buoyancy added, the higher platform which they give for passenger accommodation and for working ships and for raising the ends higher out of the water.

II. It must be remembered that as the lowest point of sheer is always abaft the centre of length, a long poop, a long quarter-deck, or a bridge-house covers it; so that the actual lowest exposed point of main-deck stands higher by several inches, due to the rise of sheer.

REASONS AGAINST.

I. They are built of a lighter scantling than the body of the ships below the main-deck.

II. All these erections, except the bridge-house, are built upon the least buoyant parts of the ship, in fact, upon parts which are not previously even self-supporting, and they thus increase the disproportion, by the addition of extra weight of fabric. At the same time advantage is usually taken of the fact that these erections relieve the below-deck-space of crew and cabin accommodation to

extend the holds farther forward and aft, filling up the spaces thus vacated with weight in the shape of cargo, causing her to "pitch" and "scend" more violently in bad weather.

III. In shallow vessels the full allowance for these erections would lead to the main-decks being loaded under water, as will be shown.

A spar-decked vessel is one whose scantlings above the main-deck (and some few variations below it) are lighter than those forming what is considered the hull proper below the main-deck; there is not now, as there was formerly, any prohibition to carry cargo above the main-deck in these vessels, but it is assumed that the object of the addition of the spar-deck is to give greater space for carrying light goods only, seeing that there is usually stowage-room below the *main-deck* for as much *dead weight* as the vessel can carry. A vessel of the same dimensions may be built as a "three-decked-cargo-boat," in which class the scantlings are rather heavier than in the spar-deck, and are considered sufficient to allow the vessel to carry a heavier weight of cargo. A nice question, however, arises, as to where to draw the line between two, three, and spar-decked vessels, but I think the only distinction can be that any vessel such as a spar or three-decked ship that avails herself of the reduced scantlings allowed in respect of the addition of an upper deck should have her *main*-deck considered as the basis for freeboard; and while no such vessels should be allowed to load their main-decks under water, yet they may reasonably be allowed much less freeboard to main-deck line than a two-decked vessel with or without erections.

The whole of the plan that I advocate, to sum it up briefly, stands thus:—

1. Calculate the buoyancy up to the lowest point of underside of main-deck—add to this again the buoyancy of all watertight erections "assessed" on the principle suggested.

2. Take 70 per cent. (or other approved percentage) of the total thus arrived at, and stipulate that this shall be the maximum load displacement, except as affected by next provision. The draught and side corresponding to this being ascertained from the scale of displacement.

3. In cases where the length is less than 12, or more than 13, times the depth moulded, at lowest point of sheer, a certain percentage shall be subtracted from or added to the lineal height of side obtained from No. 2, according to an approved scale.

The question of loading, at some ports in salt waters and others in fresh, will make a difference of about 3 per cent. in the load displacement of ships, and I think the suggestion in Mr. Plimsoll's Bill is a good one—viz., that the line which shall be put upon the ship's side to indicate her maximum load draught should be of such a breadth that the lower edge represents the proper draught in salt water and the upper edge in fresh.

I think, moreover, that in calculating the buoyancy of ships we should only take it to the underside of the main-deck, for this reason, that if in a ship having a 3 or 4-inch wooden deck we include that as buoyancy, we put a ship that has a half-inch iron deck to a disadvantage of $2\frac{1}{2}$ or $3\frac{1}{2}$ inches of draught. I think that wooden decks should not be allowed this preference, but that, on the other hand, encouragement should rather be given to owners to adopt iron decks. I would throw out a thought, somewhat undeveloped in my own mind, that the questions of scantling, condition, and equipment should *not be considered* in fixing the maximum load-line, for this reason that I think all will accept it as an axiom that *no* ship should be allowed to proceed to sea *at all* that was not strong enough to carry the weight which the prescribed reserve of buoyancy would allow her. Hence, I think, it should be more an owner question in purchasing a vessel, whether he would look at first cost or durability as the more important consideration; for if the stronger ship was allowed to load deeper the wear and tear would be increased, and her period of existence would be reduced proportionately by living a harder life, and she would, moreover, sooner arrive at that stage of weakness which would cause the surveyor to reduce her to the next lower grade. I do not see either how varieties of cargo, or length of voyages, from the great complication of such matters, can be allowed to affect the load line; nor do I think that steamers going upon long voyages should be allowed to load any deeper at the commencement on the plea that a large quantity of their fuel would be burnt away by the time they arrive at their destination, because it would appear obvious that no steamer should ever commence her voyage with less reserve of buoyancy than was considered safe. Another reason of some weight would be that, as the coal is mostly carried amidships (the part possessing the greatest buoyancy), the gradual burning away lightens this part only, and it would be very illogical still farther to load the ends of the ship, and thus increase the disproportion, leaving her at the end of her voyage more liable to straining, and certainly more uneasy in her movements.

Again, the manner of stowing the cargo, although a very important consideration, I think must be left to the owners. It is quite possible that, as things now exist, many a well-stowed, although overladen vessel, may be in a better condition than a vessel with much less weight on board, but badly stowed. At the same time, however, we must not argue from this, that because we cannot easily regulate *both* evils, we should not reduce *one* of them to a minimum.

On Auxiliary Power for Ocean Navigation.

By Henry Claughton, Esq., Naval Architect and Surveyor, Member.

My method is, to construct screw-propellers with the novel feature of folding blades; that is to say, the blades are jointed, or hinged to the boss, or its equivalent, in such a manner that they can be folded into a fore-and-aft position; and, without impairing the steering qualities of the ship, offer little or no resistance to her progress though the water when under canvas.

Messrs. R. Napier and Sons, Glasgow, have arranged to bring the propeller into use, but have had no opportunity of trying it as yet.

The Causes of the Racing of the Engines of Screw Steamers Investigated Theoretically and by Experiment.

By Osborne Reynolds, Esq., M.A., Fellow of Queen's College, Cambridge, and Professor of Civil Engineering in Owen's College, Manchester.

A phenomenon in connection with racing noticed in some experiments on a screw model driven by a spring seems to throw new and important light on the subject. The racing is shown, experimentally, to be the result of the admission of air to the screw, and not simply the diminished area of the part immersed; and it now remains to explain the precise way in which the air diminishes the resistence.

It would seem that, if this is the explanation of racing, all that is necessary, in a calm sea, to render a screw much superior to paddles in stopping, starting, or towing, is to give it sufficient immersion.

This has been tried and proved to be the case, so far as an experiment on a model is a proof. No matter what might be the power employed, so long as the surface was unbroken, there was a corresponding towing power; and so long as this condition maintained, the screw started and stopped the boat quite as well as it was possible for paddles to do.

A larger steam model capable of towing with a force of 1lb. was tried with two different screws—the one 3 inches in diameter and the other 4½. The small one was covered by about an inch of water, and it was found that this screw would not race even when the boat was held still. The larger one, however, which was only covered by about one quarter of an inch, did race when the boat was held. It would seem, therefore, that it is of more importance to secure a sufficient depth of water over the screw than to increase the diameter, and it seems probable that some of the advantage of twin screws is due to the fact that they are generally covered to a greater depth than a single screw.

On a New Form of Safety-valve.

By W. Babington, Esq.

We know that a large volume of steam escapes past the safety-valves in lever-weighted valves. And we also know that the cause of this escape is the inconstant resistance of the weighted lever, and that a reliable valve is much wanted. This want has been more generally felt since the employment of high-pressures, because the normal pressure approaches more closely the weighted point of the valve. Wilke and Esplen's "Pendulum Safety-valve," to which I beg to direct your attention, will, I think, satisfy you that a great step has been made to meet this want, the valve-box, moving freely upon hollow trunnions, preserves its centre of gravity in the heaviest weather—consequently the leaden weights with which the valve is loaded always exert the same pressure.

These weights may be placed on the spindle, or as rings may surround the valve-box itself, a cross head and guiding rods being fitted to the spindle for that purpose.

On a New Binnacle for Iron Ships to Obviate Compass Errors.

By Mr. W. F. Reynolds.

This is a very ingenious and efficient apparatus for obviating the necessity of referring to a card of errors. The compass can be adjusted for every point by the master of the vessel after he has ascertained the deviation; he has merely to turn a key one way or the other until the error is cancelled, and this adjustment for any one point does not affect the compass at any other point. As we intend to illustrate this contrivance in a future number, we defer till then any further description of it.

Demands upon our space prevent us including all the papers in this notice.

Royal National Lifeboat Institution.—We have received an account of the year's work of this institution, and most satisfactory it is. We have not, however, space in which to present it to our readers. Its absence from our pages is solely owing to this cause. It will not, however, be so much regretted since the account has already appeared in most of the daily and other newspapers.

Original Problems.—The solution by Mr. John White, of the problem in our last number is not correct. Nor are those sent under the signature of "Student" and "Young Salt." Very careful solutions have also been received from Mr. John W. White, of Bristol, Mr. Alfred Fry (Cert. Comp., 623), of Bristol. We wait further answers. We shall publish a solution by "*Nearchus*" in next number.

SAVING LIFE AT SEA.—THE EXHIBITION OF MODELS AT THE LONDON TAVERN.

With some notable exceptions the models and plans exhibited were valuable, as only helping to show how utterly mad humanitarians, often may be. Opportunities like the present bring them out in force, and it is when their absurdities are collected under one roof that the shipowner who cares to take any trouble in the matter is able to comprehend how little would be the difference between a curiosity shop and a ship, if the latter should by law be compelled to carry rarities such as those recently exhibited.

In the exhibition were some good and tried articles and appliances. Notably the boats of Mr. John White, of Cowes, Isle of Wight, that do not turn over; Messrs. Forrestt's efficient and trustworthy boats; Captain Ward's life-belts and buoys, exhibited by Messrs. Birt; Mr. Clarkson's boat, built in 1855 for Miss Burdett Coutts, probably the most perfect lifeboat ever constructed; the (gold medal) iron lifeboats of Hamilton's Windsor Iron Works, of Liverpool, the only boats that ever ought to be placed near the funnel of a steamer; the rocket apparatus supplied by the Board of Trade, which has saved nearly 6,000 lives; the lifeboats of the Royal National Lifeboat Institution; the circular life buoys of Messrs. Birt, and of Mr. Clarkson. The foregoing and some others are old and valued friends. Then we come to things that are but just beginning to make favour with the public. First of these we must note Admiral Ryder's Cork Mattrasses, exhibited by Messrs. Birt; they are cheaper, cleaner, and more comfortable than anything else for a bed at sea, and on this ground they ought to make way; but, in addition, they are efficient life buoys, so that they not only afford the means of rest and sleep to the seaman or passenger, but they also provide him with the means of escape from drowning in such cases as the *Northfleet* and other calamities. The next new friend is Mr. Clarkson's deck seat, which is convertible into a boat or raft. This is not one of the "mad" things, but is really useful; the benches are made of troughs, eighteen feet long, with two feet width and two feet depth. These troughs are placed bottom up to be used as seats, and when wanted as boats they are turned over—three of them placed side by side give an efficient lifeboat built in compartments, eighteen feet long, six feet wide, and two feet deep. The secret of success in these seats is in the scientific arrangement of the air spaces, the method of linking the seats together, and the material of which they are made. The Royal Engineers have lately adopted this method and material for their pontoons, and a slight modification of the approved pontoon is Mr. Clarkson's deck seat. So highly do the Marine Department of the

Board of Trade think of Mr. Clarkson's deck seat, that we hear they have ordered three of them to be supplied to the Rocket Apparatus Establishment, at Tynemouth, where they will serve as seats for the brigade in the rocket grounds and houses, and where their capabilities can be tested by throwing them over the cliffs, on to the rocks, and into the sea, and subjecting them to other rough usage. We look to this one invention for more saving of life than anything yet devised. The third "new face" for whom we have a good word and a good wish is the wooden lifeboat built by Woolfe, which gained one of the gold medals of the Society of Arts, a splendid boat for a ship's lifeboat, all business and security, and no humbug about it. The same may be said of Mr. John White's little boat. The fourth promising novelty is Mr. Clarkson's method of converting every existing boat into a lifeboat at a small cost. If any good whatever is to come out of the recent exhibition of toys, it is most likely to come in three forms—viz.:

1. The improvement of rafts and of seats, &c., convertible into lifeboats and life rafts.

2. The improvement of existing boats in coasters by supplying a ready and cheap and certain means of converting common boats into lifeboats.

3. The improvement of beds, life jackets, and life buoys.

It appears to us, after a very careful study of the contents of the exhibition, that the *new* things that effect the objects named above are Clarkson's deck seats for the first, Clarkson's air cases for the second, and Birt's beds for the third. These are the "novelties" we most admire for businesslike appearance and real work, and these "novelties," with the old boats of White, the Hamilton Windsor Iron Works iron boat, or the boat of Woolfe, and the solid life buoys of Birt, or the tubular life buoys of Clarkson, and for use in boats, the cork jacket of Capt. Ward, R.N., we have all that is wanted, or, at least, all that ought to be imposed on any British shipowner.

As regards signals of distress, the exhibitors have gone simply wild; and if their amiable suggestions were to be followed, a ship would, besides being a curiosity shop, afford the excitement of combining the dangers of a firework store with the cheerful and pleasing aspect of a chemist's window at night.

NEW SOLUTION OF THE CHRONOMETER PROBLEM.

By J. Gordon, A.M.

Rules.

1. Find the Colat., Polar distance, and Zenith distance.
2. Find the *sum* and *difference* of the Colat. and Polar distance.
3. Find the Versed Sines of the *Sum*, and of the Zenith distances writing them in separate columns.
4. Below these write the Su-versed sine of the *Difference*.
5. Add these, rejecting 2 from the index of each.
6. Double the second sum, and divide this by the first sum, the quotient will be the Versed Sines of the Horary angle.

Example.

Given the P.D. 92° 10′, the Z.D. 64° 52′, and the Colat. 58° 45′.

P.D. 92° 10′
Colat. 58 45

Sum.	150	55	Vers	1·87391	Z.D. 64°52′	Vers	57527
Diff.	33	25	Suvers	1·83467	Diff., Suvers		1·83467
				1·70858			·40994
							2
							·81988

Then by Contracted Division, we have—

1·70858)·819880(·47986
688432
which is Vers of 58° 39½′ = 3ʰ 54ᵐ 38ˢ
136448 = Hor. angle
119601
16847
15377
1470
1367
103
102
1

Remarks.

In the above the division is actually performed arithmetically, in order to illustrate the curious fact that the Chronometer Problem may be solved solely by a Table of Natural Versed Sines. But to the generality of calculators, the following rule will be easier.

Rule.

Reckon the Sums found by Rule 5 as integers; then from the Logarithm of the second Sum subtract the Logarithm of the first, borrowing index 10: the remainder will be the Log. of the Horary angle (Norie) Table XXXI.

40994 Log. 4·612720
170858 Log. 5·232635

Hor. angle $3^h\ 54^m\ 38^s$ Log. 9·380085

In my "Lunar and Time Tables," I have given a formula, by which the Problem can be solved by means of a Table of Natural Cosines only; but the above method by Versed Sines; has no double case, which that by Cosines has.

If the Arcs contain seconds, and it is required to find the proportional parts for them, the above method forms an easy solution, as these parts are given in the Table of Versed Sines; and it is only necessary to compute the parts for the two, which are natural numbers.

All the parts may be made *additive*, by a similar artifice as is used in the case of the Cosine of an arc which contains seconds.

Thus in the above Example—

	Prop. Pt.	
40990 Log. 4·612678	42	for 4
170900 Log. 5·232742	107	for 42
9·379936	149	
149		
9·380085		

For the Divisor we take 170900 instead of 170800—*i.e.*, 100 too much; therefore, we take the Proportional parts for 100—58 (the two remaining figures of the Divisor) = 42: which gives 107, to be added.

STEAM SHIP BUILDING, 1873.

We stand as follows for the first three months of the present year. The places are arranged according to the tonnage built:—

Clyde:				
Glasgow ...	25	ships. ...	45,490	tons gross.
Port Glasgow ...	2	,, ...	715	,,
Sunderland ...	28	,, ...	34,065	,,
Tyne:				
Newcastle ...	16	,, ...	21,120	,,
North Shields ...	11	,, ...	5,740	,,
South Shields ...	5	,, ...	2,978	,,
Liverpool ...	8	,, ...	9,537	,,
Dundee	4	,, ...	4,529	,,
Hartlepool ...	3	,, ...	3,865	,,
Aberdeen ...	4	,, ...	3,536	,,
London	7	,, ...	2,735	,,
Belfast	1	,, ...	2,652	,,
Stockton	2	,, ...	2,584	,,
Kirkcaldy ...	1	,, ...	2,019	,,
Middlesboro' ...	2	,, ...	1,860	,,
Hull	3	,, ...	1,543	,,
Leith	1	,, ...	1,400	,,
Bo'ness	1	,, ...	1,080	,,
Other ports ...	4	,, ...	524	,,
Total ...	128		147,972	

Brazilian Coasting Trade.—Board of Trade, Feb. 12, 1873.—The Board of Trade have received from the Secretary of State for Foreign Affairs a translation of a decree (of which the following is a copy) by the Emperor of Brazil respecting the coasting trade of that country:—"Making use of the authority conferred on the Goverment in Article 23 of the Law 1177 of the 9th September, 1866, I hereby prolong until the end of December, 1873, if previously no other provision be adopted by the General Assembly, the dispositions of Decree No. 3,631 of March 27, 1866, which permit foreign ships to engage in the coasting trade between the ports of the Empire where Custom Houses are established. Viscount Rio Braneo, &c., &c., is charged with the execution of this decree.—Palace of Rio Janeiro, Dec. 11, 1872. Under the hand of His Majesty the Emperor, Viscount Rio Braneo.—*Gazette.*

BOOK RECEIVED.

Practical Nautical Surveying. (Illustrated.) By Staff Commander Thomas A. Hull, R.N. London: J. D. Potter, Poultry.

THIS reprint of a lecture, delivered last year at the Royal United Service Institution, forms a simple as well as practical little treatise, containing many of the small essentials so useful to beginners, which are often overlooked in works of a higher class.

Commander Hull, in descending to the necessary simplicities of every-day arithmetic and practical geometry, reminds us of the almost forgotten style of Robertson and Murdoch Mackenzie.

Another feature in this little work is, that it points out what can be done by the ordinary instruments with which every sailor is familiar—viz., compass, sextant, and lead line, scale and dividers. The remarks on the sextant, especially show a hearty appreciation of that invaluable instrument.

It is to be regretted, however, that the remarks on obtaining true bearings of terrestrial objects are so brief; although this problem is fully treated upon by Inman and Raper, still a repetition in the present work would be found most useful.

The instructions with regard to sounding, if duly followed, would be of great assistance to officers having to resort to a newly-found harbour, island or shoal, and care is taken to impress on beginners the importance of this branch of the art. Attention is also called to the fact that in acquiring a knowledge of nautical surveying, the duties of the sailor and navigator are by no means to be neglected.

In conclusion, the author, admitting the simplicity of nautical surveying, at the same time, forcibly points out to those who may wish to attain proficiency, the necessity of straightforward perseverance and incessant practice, when opportunities offer; and suggests the desirability of extending to navigation and nautical surveying a care and encouragement similar to that which naval gunnery has so long enjoyed.

We have much pleasure in recommending this concise work to the notice of young officers, while we are of opinion that commanders-in-chief might vary the exercise of manning and arming boats by occasionally practising Commander Hull's night surveying, a matter of scarcely second-rate importance in offensive operations against the enemy.

HYDROGRAPHIC NOTICES.

THE following remarks and information relating to the coast of Labrador, between Cape St. Charles and Sandwich Bay, are by Navigating Lieut. George J. Tomlin, of H.M.S. *Eclipse*, 1873.

Round Hill Island, about 85 miles to the northward of Belle Isle, is the best land-fall to make on this part of the coast of Labrador; it being detached, remarkable, and the east side clear of all dangers.

The Coast.—The islands between Round Hill island and the main are incorrectly laid down upon the chart No. 263; the good passage there spoken of can hardly be considered as such, as there are several sunken rocks, some of which only break when a high sea is running. Vessels wishing to pass inside of Round Hill island should go through the Dismal islands, passing between Double and Saddle islands (the latter may be known by being in the form of a saddle, with several rocks and breakers running off its south-east end), passing westward of a three-fathoms patch by keeping Double island well open on the port bow until abreast of that island, and White rock, a small island about 30 feet high, clear of the land to the southward of it. White rock is much further to the eastward than shown by the chart; a small reef, upon which the sea breaks heavily, lies about a mile N.E. of this rock.

There are no dangers except which show off the Seal islands and Ravens, which lie to the southward of the White rock. The Venison islands, on the eastern shore of Stony island, at the entrance of Hawke bay, are a cluster of islands and rocks, clear upon their east side, but along the south side several small rocks and breakers extend some distance from the land.

Tub harbour, on the south-west shore of Stony island, not shown upon the chart No. 263, forms a small and snug anchorage for vessels of 200 tons, and under, and has two entrances, but both are intricate, and require the assistance of a pilot in entering or leaving. Off Tub harbour are several rocks, one awash near its south entrance, and another at the north side of the southern entrance which always shows; but at a short distance to the northward of this is a rock which only breaks in heavy weather.

From Round Hill island a course may be shaped to pass outside Spotted island; or if wishing to communicate with Domino, steer for the Green islands, two small islands at the entrance of Domino run.

Rock.—Between Beach and Grog islands, at the north-west end of Domino run, one-third of the distance across from Beach island is a dangerous rock with 10 feet. The master of tho brig *Trusty* informed

Navigating Lieutenant Tomlin that he had touched it with an oar when passing through in a boat.

Covey Rocks.—These Rocks, of which the northern one is about 20 feet high, lie to the eastward of their position upon chart No. 263, and are named by the fishermen the Black rocks. There are some shoal patches between the southern one and the main land, and a rock upon which the sea only breaks in heavy weather lies about N.W. two to three cables from the rocks.

After clearing Domino run, steer to pass to the eastward of Wharton island, called Deer island by the fishermen, and to the westward of the Ferret islands, Tinker rocks, and a ledge of rocks a few feet above water, between the Tinkers and Gready islands. This dangerous ledge, over which the sea breaks heavily, has several detached rocks running off either end for some distance; the north part of these rocks is called by the fishermen Duck island, the south part Wreck island. From the Tinker rocks the course lies between Cross island and cape north, the latter is bold-to and may be passed at a distance of one cable.

Curlew Harbour.—About 3 miles to the westward of cape *North is* a good harbour, sheltered from westerly winds and sea by *Round and* Green islands. The inner harbour is small, and it would be necessary for a long ship to moor; also, between the two points of the inner harbour is a rock with 14 feet. The *Eclipse* anchored outside this rock in $14\frac{1}{2}$ fathoms, with the east extreme of Green island bearing N. $\frac{1}{4}$ E., and the west extreme of Round island, N.N.W. $\frac{1}{2}$ W.

Cartwright Harbour, about 15 miles to the westward of Curlew harbour, on the eastern side of the entrance to Sandwich bay, is also a secure and safe harbour with good holding ground, but the tides and eddies run strong through the different channels between the two harbours. The flagstaff upon Curlew hill, formerly a conspicuous mark, was blown down during the winter of 1871, but the small building used as a look-out house still remains.

Gready Reef.—The reef at the entrance of Gready anchorage off Cape North is more commonly known by the name of Mad Moll, the Gready reef of the fishermen being the rock awash between Black or Gready island and the Gannet islands.

From the entrance of Gready anchorage, a course of N. $\frac{1}{2}$ W. will take a vessel clear to the westward of the Hern islands. Great caution is here required, and this passage should not be undertaken except in fine and clear weather (until a more correct survey is made), as several rocks exist between the Gannet and Hern islands, which are not shown upon the charts; some are awash or break at low water. Upon three of these rocks the sea was breaking heavily at the time the *Eclipse* passed to and

from Indian harbour: these lay, by estimation, and also from the information of the pilot (Mr. D. O' Sullivan), one N.W. about 8 miles of the western Gannet island, another 2 miles south-west of the Puffin rocks, and the last three miles south of the Southern Hern; a rock, upon which the sea broke occasionally, also lay about two miles from the east side of George island. An out-set from Hamilton inlet was felt on passing that opening.

Coast Pilot.—A local pilot is required for the coast of Labrador; it is imperfectly surveyed, and the present charts do not show many rocks and dangers that exist, also occasional names of places given are different from those by which they are known to the fishermen.

Compasses.—Great attention should be paid to the working of the compasses, and every opportunity taken of determining their deviations by astronomical or shore bearings.

Icebergs.—Several icebergs were fallen in with upon the coast; they were in many cases aground, and invariably large.

Current.—During September, 1872, the current was running with a velocity of from three to four knots to the southward; this southerly set is often checked by southerly winds, and has at times been known to run in the opposite direction.

Fogs are the great drawback to navigation upon this coast; during September they last at times for a week or ten days. A thick fog may be found in the offing, while at a distance of about a mile from land, and within the harbours, the weather will be clear.

Winds.—On the coast of Labrador north-east winds bring rain or thick drizzling weather, and south-east winds fogs. With south-west winds the weather clears, and with north-west winds it is fine with a bright blue sky. Strong north-westerly and northerly winds may be expected during the months of September and October.

Pacific Ocean.—A collection of the Hydrographic Notices, published from time to time by the Admiralty, relating to the several island groups in the Pacific Ocean is about to be published, and will be procurable, at a small cost, at the Admiralty Chart agent's, Mr. Potter, 31, Poultry. This mode of giving seamen information is a decided advantage and a step in the right direction, as the Hydrographic Notices, published by the Admiralty are not "for sale," and, therefore, not within the reach of merchant seamen, unless they take in the *Nautical Magazine*, which always contains the most important of the hydrographic notices issued by the Admiralty. A collected issue, from time, to time of the various parts of the world, or relating to the sailing directions respectively, would be a great boon to our Merchant Navy.

MONTHLY ABSTRACT OF NAUTICAL NOTICES.

No.	Place.	Subject.
87	England—South Coast—Longships	Intended Alteration in Light.
88	Australia—Victoria—Port Phillip	Intended Lights for South Channel.
89	Newfoundland—South Coast—Fortune Bay—Harbour Briton	Establishment of a Light.
90	Bay of Fundy—Bryer Island Lighthouse	Establishment of a Fog Signal
91	Ceylon—Great Basses Rock	Exhibition of Light.
92	England—South Coast—Owers Light	Alteration in Light.
93	England—West Coast—Holyhead Breakwaker	Intended Light.
94	England—East Coast—Yarmouth Roads	Intended Lights for Caistor Shoal.
95	Ireland	Intended Alteration in Lights.
96	Black Sea—Danube River—Sulina Mouth	Establishment of a Light.
97	Adriatic—Quarnero Gulf—Neva Point	Establishment of a Light.
98	United States—New York—Governor Island	Establishment of Fog Signal.
99	United States—Rhode Island—Newport—Goat Island	Establishment of Fog Signal.
100	Nova Scotia—Sable Island	Establishment of a Light and Fog Signal.
101	France—West Coast—Gironde River—South Entrance	Intended Establishment of Leading Lights.
102	United States—New York—Montauk Point Lighthouse	Establishment of a Fog Signal.
103	United States—Rhode Island—Beaver Tail Lighthouse	Establishment of a Fog Signal.
104	United States—Rhode Island—Point Judith	Alteration in Fog Signal.

NAUTICAL NOTICES.

87.—England.—*South Coast.—Longships Rock.*—As the new lighthouse in course of erection is now far advanced towards completion, in the course of the summer a *fixed* light of the first order will be exhibited from it. The light will show *white* seaward between the bearings S.S.W ⅔ W., and N. by W., leading half a mile outside the Brissons rocks, and three-quarters of a mile outside the Runnelstone, and will show *red* between S.S.W. ⅔ W. and S.W., and also between N. by W. and N.N.W. ¾ W. A *red* light of less power will be shown towards the land. In thick or foggy weather, a bell will be sounded *twice* in quick succession *every quarter of a minute.*

88.—Australia.—*Victoria.—Port Phillip.*—On or about the 1st May, 1873, the following leading lights will be exhibited for the purpose of facilitating the navigation of the South channel. The Eastern or inner light, which will be shown immediately under Arthur's seat, will be a *fixed* light, elevated 80 feet above the level of high water, and should be

seen 14 miles. The Western, or outer light, will be in the position of No. 10 buoy in the South channel; it will also be a *fixed* light, 27 feet above the sea, and should be seen about 10 miles. Both light will be of the fourth order. The lights will be cut to guide vessels clear of the Middle ground.

89.—NEWFOUNDLAND.—*Fortune Bay.—Harbour Briton.*—A light is now exhibited from a lighthouse recently erected on Rocky point, west side of the entrance of Harbour Briton. The light is a *fixed red* light, 68 feet above the sea. The tower, 14 feet high, is square, painted white, with red at the corners, and from it the rock off East head bears S. by W. ¼ W. 1½ miles. Position, lat. 47° 27′ 30″ N., long. 55° 47′ 45″ W.

90.—BAY OF FUNDY.—*Bryer Island Lighthouse.*—During thick and foggy weather and snow storms, a whistle will be sounded *three* times in *each minute*, as follows:—A blast of *four seconds*, and an interval of *four seconds*; then a second blast of *four seconds*, also followed by an interval of *four seconds*; and a third blast of *four seconds*, with an interval of *forty seconds*, to complete the minute. The whistle will probably be heard, in calm weather, or with the wind, 10 to 15 miles. In stormy weather, or against the wind, 3 to 6 miles.

91.—CEYLON.—*Great Basses Rock.*—The light is now exhibited, and is a *revolving red* light of the first order, attaining its greatest brilliancy *every forty-five seconds*, elevated 110 feet above the sea, and should be seen 16 miles. In thick or foggy weather, a bell will be sounded at intervals of *seven and a half seconds*. The light-vessel hitherto moored near the rocks has been removed.

92.—ENGLAND.—*South Coast.—Owers Light.*—The new light-vessel has been placed in position, and the light now exhibited is a *revolving* light, showing *white* and *red flashes* at intervals of *half a minute*, in the order of *two white* and *one red*. In thick or foggy weather a powerful fog trumpet will be sounded *six blasts every minute*. Mariners should remember that the fog trumpet at St. Catherine's gives *three* blasts every minute.

93.—ENGLAND.—*West Coast.—Holyhead Breakwater.*—The lighthouse on the breakwater being now nearly completed, it is intended to exhibit a light therefrom early in June. The light will be a *flashing red* light, showing a flash *every fifteen seconds*, elevated 66 feet above the level of high water. On the exhibition of the light, the temporary light now exhibited will be discontinued. In thick or foggy weather, a bell will be sounded *three times* in quick succession, at invervals of *fifteen seconds*.

94.—ENGLAND.—*East Coast.—Yarmouth.*—In order to facilitate the navigation of the entrance to Yarmouth roads from the northward, it is

intended, early in the ensuing summer, to exhibit two *fixed red* leading lights as night marks to clear the Caistor shoal. The upper light will be exhibited from a window in the Sailors' Home, Yarmouth, 50 feet above high water. The lower light will be a gas lamp, about one-third of the length out, on the Britannia pier, 20 feet above high water.

95.—IRELAND.—On the 30th June, 1873, the following alteration will be made in the under-mentioned lights :—

South Arklow Light will be changed from a white revolving light, attaining its greatest brilliancy every minute, to a white revolving light, attaining its greatest brilliancy *every half minute*.

Tuskar Rock Light will be changed from a revolving light every two minutes, to a revolving light *every minute*.

Fastnet Rock Light will be changed from a white revolving light, attaining its greatest brilliancy every two minutes, to a white revolving light, attaining its greatest brilliancy *every minute*.

Eeragh, or the North Arran Light, Galway Bay, will be changed from a white revolving light, attaining its greatest brilliancy every three minutes, to a white revolving light, attaining its greatest brilliancy *every minute*.

Inishtrahull Light will be changed from a white revolving light, attaining its greatest brilliancy every two minutes, to a white revolving light, attaining its greatest brilliancy *every minute*.

96.—BLACK SEA.—*Danube River.—Sulina Mouth.*—A *fixed red* light is now exhibited 43 feet above the sea, on the head of the North Mole.

97.—ADRIATIC.—*Quarnero Gulf.—Point Neva.*—A fixed white light, 44 feet above the sea, and visible 9 miles, is now exhibited from a light-house at the south-east angle of the keeper's house on the point. Position, lat. 44° 57½′ N., long. 14° 8¾′ E.

98.—UNITED STATES.—*New York Harbour.—Governor Island.*—A fog-bell has been established on the north-west end of the island, which in thick or foggy weather will be struck *twice* in quick succession *every twenty seconds*.

99.—UNITED STATES.—*Rhode Island.—Newport Harbour.—Goat Island.*—A fog-bell has been established at the lighthouse on this island, which, in thick and foggy weather, will be struck *every fifteen seconds*.

100.—NOVA SCOTIA.—*Sable Island.*—A *fixed white* light, of the second order, is now exhibited one and a half miles from the east end of the island. It is elevated 128 feet above the sea, and should be seen 17 miles. The lighthouse is octagonal-shaped, and painted alternately white and dark brown. Position, lat. 43° 58½′ N., long. 59° 46′ W. In thick or foggy weather and snow storms, a steam fog-whistle will be sounded

as follows:—First, a blast of *three seconds*, then an interval of *three seconds*, then another blast and interval of the *same duration*, and then a third blast of *three seconds*, with an interval of *forty-five seconds* to complete the minute. The whistle will probably be heard 10 to 15 miles in calm weather, or with the wind, and 8 to 6 miles in stormy weather, or against the wind.

101.—FRANCE.—*West Coast.—Gironde River.*—On the 15th June, 1873, the following lights will be exhibited to indicate the direction for entering the port by the Passe de Grave (Southern channel):—

St. Nicolas.— A *fixed green* light, 71 feet above the sea, and visible 7 miles, from a square tower on the dunes of St. Nicolas, and W. $\frac{3}{4}$ S. from Pointe de Grave light. Position, lat. 45° 33$\frac{3}{4}$′ N., long. 1° 5′ W.

Chay.—A *fixed red* light, 88 feet above the sea, and visible 10 miles, from a lighthouse West of Royan, and a cable from the edge of the cliff, painted upper part black. Position, lat. 45° 37$\frac{1}{3}$′ N., long. 1° 2$\frac{1}{2}$′ W.

St. Pierre de Royan.—A *fixed red* light, 177 feet above the sea, and visible 12 miles, from a square tower painted in white and red bands alternately, and bearing N.E. by E. $\frac{3}{4}$ E. from Chay light. The tower is situated North of Royan in lat. 45° 38′ N., long. 1° 1$\frac{1}{3}$′ W.

These lights can be seen only 10 to 12 degrees on either side of the line of direction.

Note.—Vessels entering the Gironde by the South channel, should keep St. Nicolas light in one with Pointe de Grave light until Chay light comes in one with St. Pierre de Royan light, and then keeping these in line proceed until the Talais and Richard floating lights are in line, which is the leading mark into the river.

102.—UNITED STATES.—*New York.—Montauk Point Lighthouse.*—A fog-trumpet has been established, which in thick and foggy weather will give blasts of *twelve seconds* duration, with intervals of *fifty seconds*.

103.—UNITED STATES.—*Rhode Island.—Beaver Tail.*—The fog-signal at this station is now a trumpet, which in thick or foggy weather will sound for *six seconds*, with alternate intervals of *ten* and *fifty seconds*.

104.—UNITED STATES.—*Rhode Island.—Point Judith Lighthouse.*—The fog-trumpet has been replaced by a steam fog-*syren*, which in thick and foggy weather will give blasts of *six seconds* duration at intervals of *forty seconds*.

CHARTS, *&c., Published by the Hydrographic Office, Admiralty, to the end of April*, 1873, *and Sold by the Agent, J. D. Potter*, 31, *Poultry, and* 11, *King Street, Tower Hill.*

No.	Scale.		s.	d.
2010	m = 2·0	England, West Coast—Morecombe Bay ...	3	0
1156	m = 3·5	South America, Guiana—Nickerie River ...	0	6
1170A, 1170B	m = 1·0	England, West Coast—Holyhead to Liverpool, *each*	2	6
2838	m = 0·5	Red Sea—Strait of Jubal	2	6
929	m = 1·0	Sulu Sea—Cagayan Sulu	1	6
87	d = 6·0	Spain and Portugal—Cape Finisterre to Cape St. Vincent	2	6
2192	m = various	Russian Tartary—Anchorages in South part of Saghalin Island	1	0
936a, b	m = 1·0	New Caledonia, with Isle of Pines, 2 sheets each	2	6
293	m = 4·0	Newfoundland, East Coast—Fogo Island to Cape Bonavista, with views	2	6
2485	m = 1·5	West Indies—Barbadoes (*preliminary chart*)	2	6
8a to e	m = 0.11	The Red Sea, 5 sheets, each	2	0

OUR OFFICIAL LOG.

UNSEAWORTHY SHIPS.—The Board of Trade, by notice published in various newspapers, desire to call attention to the fact that they can entertain no complaint or allegation of unseaworthiness under the 10th section of the Merchant Shipping Act, 1871, unless the complaint or allegation be in writing, and give the full address and name of the complainant. A copy of the complaint or allegation has to be sent by the Board of Trade to the master or owner before or during survey. Complaints should be sent in sufficient time to enable the Board of Trade to comply with the provisions of the Law, and to give them time to instruct their surveyors in the matter. Letters should be addressed to the Assistant-Secretary, Marine Department, Board of Trade, and should state distinctly and precisely the name and description of the ship, the name of the port and place where she is lying, and whether she is a steamer or a sailing vessel.

MARTINIQUE DRY DOCK OF FORT-DE-FRANCE.—Ships having more than 2,000 tons, whatever may be their nationality, shall enjoy a reduction of 50 p. 100 upon the part of their tonnage exceeding this limit. Such reduction lays on the entry and stay duties.

POSTAL NOTICES.—Envelopes frequently used for letters and packets sent through the post are unfit for the purpose, causing damage to the correspondence. The public, therefore, are urgently recommended always to use strong envelopes, which in case of bulky or very heavy letters should be made of linen. This caution has become the more necessary since, owing to the late large reduction in the rate of postage, many more bulky and heavy letters and packets are now sent through the post than formerly. The re-direction of letters from one part of the postal to districts of London to another imposes great trouble upon the Department. Moreover, the number of the removals which are placed on record is now so large that it is difficult to prevent the occurrence of mistakes. The Department would be considerably relieved in this respect, and many errors prevented, if persons who are about to change their residence would do their best to inform their correspondents of their intention, so that their letters might be directed in the first instance to their new address. It is hoped that this suggestion will as far as possible be acted upon. It is not at present intended to charge additional postage for the official re-direction of letters from one part of London to another.

A TREASURY WARRANT came into operation on the 1st of April, fixing the rates of postage on letters posted in British India addressed to Australia or New Zealand at 6d., if not exceeding in weight half an ounce, and 6d. for each additional half-ounce, or part of half-ounce; on letters posted in British India, Hong Kong, China, Japan, Ceylon, the Straits Settlements, Java, Borneo, Labuan, Philippine Islands, Cape of Good Hope, Natal, St. Helena, Ascension, or Egypt, and addressed to foreign ports on the Eastern coast of Africa, and posted in the latter and addressed to the former places, at 10d., if not exceeding in weight half an ounce, and 10d. for each additional half-ounce or part of a half-ounce.

CURRENTS NEAR THE CUBAN COAST.—The following despatch from Her Majesty's Consul-General at Havana, reporting the prevalence of currents near the Gulf Stream in the neighbourhood of the Island of Cuba, has been received at the Foreign Office:—"Havana, Dec. 16, 1872. My Lord,—I have the honour to report to your Lordship, for the information of the Board of Trade and of the Admiralty, that severe storms from the north—not amounting to hurricanes, but each storm lasting several days—have visited the coasts of Cuba and the neighbouring districts of sea during the last ten weeks. The British Merchant brig *Wild Wave* was driven ashore on the 'Alacranes' Reef, Sept. 18, and got off with difficulty; she succeeded in reaching this port, much damaged, and after a survey was condemned and sold. The barque *E. B. Haws* was wrecked on the Bahia-Honda Reefs, 70 miles from this, during hazy and stormy weather, on the 17th Nov., and proved a total loss; and the

brig *Sarah Ellen* was totally wrecked on the 2nd Dec. inst., on the 'Nuevitas Outside Reef,' north coast of Cuba. Fortunately no lives have been lost by the wrecks of these British ships, but I have thought it right specially to report them to your Lordship, because in each case the masters of these vessels have severally stated that unusual and unprecedented currents have existed during the last year in the waters near this island. In the wreck on the Alacranes the master thinks that the usual currents near these reefs have of late totally reversed its course; and in those of the Cuban reefs the two masters assert that a strange, and hitherto unremarked, back-water current (from Gulf Stream) was one cause of their misfortunes, and that the 'set' of the current now differs from that given as 'usual' both in English and American charts, and in the published 'Sailing Directions' for guidance of shipmasters. I shall try to make up and send to the Board of Trade a 'Casualty Return' of each, but as the masters of such vessels are often a very short time in Havana, this is sometimes difficult to obtain. I have noticed that shipmasters everywhere, after losing their vessels, are inclined to blame winds, storms, and currents; but the testimony of these three men pointedly asserted the present peculiarity of currents near the influence of the Gulf Stream, and I ask leave to bring the circumstance under your Lordship's observation. I have, &c., A. GRAHAM DUNLOP." "P.S.—Since writing thus far, one of these shipmasters has stated to me, that along the northernmost coast of Cuba, between the west end of the Bahama Channel and Cape Antonio, the 'back-water' current which used to run nearly from due E. to W., seems to him to run strongly, especially with continued N. winds, from N.E. in shore to S.W., and that the Gulf Stream itself now runs (N.E. and N.) nearer than before to the Florida coast. I give his remarks for what they are worth, without venturing to form an opinion regarding them.—A GRAHAM DUNLOP.—The Earl Granville, K.G., &c."

BURIAL OF DEAD BODIES CAST ON SHORE FROM THE SEA.—The law relating to this subject will be found in the following extract from *Glen's Poor Law Statutes*, Vol. I.:—"An Act for providing suitable interments in churchyards or parochial burying-grounds in England for such dead human bodies as may be cast on shore from the sea in cases of wreck or otherwise, was passed 48 George III., cap. 75." This Act sets out that the churchwardens and overseers of the poor for the time being of the respective parishes throughout England, in which any dead human body shall be found thrown in or cast on shore from the sea, by wreck or otherwise, shall cause the same to be forthwith removed to some convenient place, and cause such body to be decently interred in the churchyard or burial-ground of such parish, so that the expenses attending on such burial do not exceed the sum which at that time is allowed in such

parish for the burial of any person or persons buried at the expense of such parish. In case any such body or bodies shall be thrown in or cast on shore from the sea in any extra parochial place, where there are no churchwardens or overseers of the poor, then in such case the constable or headborough of such place shall forthwith cause such body or bodies to be removed to some convenient place, and cause the same to be buried in such and the like manner as the churchwardens and overseers within England are hereby required to bury such body or bodies.

SPENCER'S GULF, SOUTH AUSTRALIA.—Notice is hereby given, that information has been received from Staff-Commander F. Howard, R.N., of H.M. surveying schooner *Beatrice*, that a rock having only 9 feet water on it, at low water, with 7 to 8 fathoms all round it at one cable's length distance from its centre, has been discovered, with the following bearings from the rock:—Small islet off Cape Donnington, N. 49° W. true distant 10·2 miles. Highest part of Dangerous Reef, N. 68° E. true distant 2·8 miles. This notice affects Admiralty Chart, Sheet No. 2389.—Geo. E. DeMole, Secretary. Marine Board Office, Port Adelaide, 10th February, 1873.

BOARD OF TRADE CIRCULARS.

COMMUNICATIONS WITH THE MERCANTILE MARINE OFFICES IN LONDON.—In consequence of arrangements which have been made for the postage, free of charge, of letters addressed to the various offices and to the departments connected with the Board of Trade now concentrated at St. Katharine Dock House, the following regulations must be observed:—All letters must be addressed Mercantile Marine Offices, Tower Hill, London, and must contain in the lower left-hand corner of the envelope or cover the name of the department for which it is intended. The following are the offices and departments at the St. Katharine Dock House to which this circular refers—viz.: Local Marine Board, Mercantile Marine Office, Chief Surveyor of Steam Ships, Surveyors of Steam Ships, Surveyors of Tonnage, Emigration Officers, Examiners of Masters and Mates, Examiners of Engineers.—January, 1873.

SECOND ENGINEERS.—There appears to be some diversity of practice among the Examiners as to the recognition of service as Second Class Engineer in vessels under 100 horse-power, which are not required by law to carry a certificated second engineer. The Board of Trade, therefore, desire to point out that if a candidate has served in the engine room with a second class certificate in the capacity of a second engineer, as required by the regulations, his service may be accepted without reference to the vessel's horse-power, provided he has been on the ship's

articles as second engineer and produces certificates of discharge as second engineer for the required period.—January, 1873.

Compass Deviation.—The Board of Trade have observed that in many cases questions 7, 8, 9, and 10 of Circular 517 (List B.) are not answered by candidates, and they have reason to believe that the importance of these questions is often overlooked. The attention of the Examiners in Compass Deviation is therefore directed to this point. A copy of Mr. Merrifield's work on "Magnetism and the Deviation of the Compass," in which the questions referred to are well worked out, accompanies this circular for the guidance of the examiner.—January, 1873.

Lime and Lemon Juice.—It has been brought to the notice of the Board of Trade that considerable misapprehension exists among owners and masters as to the quantity of lime or lemon juice required, by Section 4, p. 5, of the Merchant Shipping Act, 1867, to be served out to the crews of vessels coming under its provisions. The paragraph in question is as follows:—The master of every such ship as last aforesaid shall serve or cause to be served out the lime or lemon juice with sugar (such sugar to be in addition to any sugar required by the Articles) or other such anti-scorbutics as aforesaid to the crew so soon as they have been at sea for ten days, and during the remainder of the voyage, except during such time as they are in harbour and are there supplied with fresh provisions; the lime or lemon juice and sugar to be served out daily at the rate of an ounce each per day to each member of the crew, and to be mixed with a due proportion of water before being served out, or the other anti-scorbutics, if any, at such times and in such quantities as Her Majesty by Order in Council may from time to time direct. The Board of Trade desire to call the attention of masters and owners to the foregoing provisions and to the penalties fixed by Section 4, for neglect to comply with them. The point this circular is intended to emphasise is that the juice must be served out daily.—January, 1873.

Lights of Foreign Ships.—The attention of the Board of Trade has been called to the fact that collisions in many cases occur through foreign vessels not being fitted with the lights required by the regulations. The Board of Trade desire to point out that the regulations for preventing collisions at sea are applicable both to foreign and British ships, and that when foreign ships are within British jurisdiction, the inspectors appointed by the Board of Trade have power to enforce compliance with the regulations in the same manner as in the case of British ships. They desire, therefore, that the surveyors will be careful to inspect the lights in foreign ships in which the regulations are not complied with, and make a full report to this board, in order that the case may, if it seem desirable, be brought to the notice of the Government of the country to which the

vessel belongs. The Board of Trade regard the duties of the surveyors in this respect as highly important. They do not wish the surveyors to take steps to prevent foreign ships from proceeding to sea, even if their lights do not comply with the regulations, but merely to report full particulars for the information of the Government of the country to which the ships belong. British ships will, of course, be treated as heretofore, and detained in port until the regulations are complied with.—February, 1873.

Fees for Surveys, &c.—New Schedules, Nos. 37 and 41, have been prepared for bringing to account the fees received on account of surveys for the above-named services. Any fees received for surveys under the Passengers Acts, 1855 and 1863, or for distilling apparatus, or for the medical inspection of emigrants, should be credited in the proper column of Schedule 37. Any fees received on account of admeasurement of tonnage should be credited in Schedule 41. Fees received for the survey of unseaworthy ships should be credited in Schedule 43, and payments to surveyors for their expenses charged in Schedule 40. A new form of account current is in the press, and should be demanded without delay in the usual way.—March, 1873.

Screw Tunnels.—It is very desirable that the screw tunnels of all vessels should be strongly constructed and water-tight; and the surveyors should require this to be done in the case of all new vessels coming under their notice. The surveyors are also directed to see that an after water-tight compartment is fitted to cover the stern tube of the screw shaft, if there is not one already.—March, 1873.

Fees for Survey of Foreign Steamers.—The board of Trade have decided that the fee to be charged for the survey of a steamship built in this country for foreign owners shall in all cases be not less than the fee charged for passenger certificates granted for a full period of twelve months, notwithstanding that the builders or owners may apply for a short certificate. There is no legal obligation for such ships to be surveyed at all; but if owners or builders wish them surveyed for their own purposes, they are not to be allowed, for their own purposes, to reduce the fees. Superintendents are, therefore, instructed to be careful to receive, with the application for survey (Form Stm. 39) for every *new* steamship, by whomsoever the application is made, a fee for a period of not less than twelve months. Surveyors are instructed to grant a declaration for a shorter period if they think fit, but to call the attention of the Board of Trade, by a remark on their declaration, to the fact that the vessel is surveyed, on the application of builders or agents, for foreigners.—March, 1873.

Pressure on Boilers.—The Board of Trade think it desirable to instruct the surveyors that a pressure once allowed on the boiler of a

passenger steam ship is not *under any circumstances whatever* to be increased, unless the surveyor has previously written for and obtained the instructions of the Board. In cases where a surveyor is of opinion that an increased pressure may with safety be allowed, he should communicate with the surveyor who last surveyed the vessel; and if, on learning the reasons why the existing pressure was formerly allowed, the surveyor is still of opinion that it may be increased, he should communicate all the facts of the case to the Board of Trade; but, as above stated, the pressure should not in any case be increased until the question is decided by them.—April, 1873.

Naval Courts.

No. 14.—*Cambay.*—On the 1st February, 1873, a Naval Court was held at Ascension, under the presidency of Lieutenant E. D. Law, R.N., to inquire into charges of wilful disobedience, neglect of duty and insolent language, preferred against an A.B. of the *Cambay*. He was acquitted.

No. 15.—*Emulation.*—On the 25th and 26th February, 1873, a Naval Court was held at New York, under the presidency of H.B.M. Consul-General, to inquire into a charge of misconduct and neglect of duty preferred against the 1st and 2nd mates of the *Emulation*. They were severely reprimanded and dismissed from the ship.

No. 16.—*Southern Belle.*—On the 16th January, 1873, a Naval Court was held at Manila, under the presidency of H.B.M. Consul, to inquire into charges of drunkenness, incompetency, and purloining of stores, preferred against the 2nd officer of the *Southern Belle*. He was found guilty of drunkenness and disorderly conduct, and sentenced to be removed from his position as 2nd mate, and to pay expenses.

Local Marine Board Inquiries.

Catherine.—On the 7th April, 1873, by the Local Marine Board, Aberdeen. Charge of unlawfully taking possession of coals, part of cargo of *Christiana Carnall*, preferred against the master of the *Catherine*. Certificate suspended for six months.

Una.—On the 12th March, 1873, enquiry by the Liverpool Local Marine Board. Charge of drunkenness preferred against the second engineer of the *Una*. Certificate suspended for six months.

Serantes.—On the 13th March, 1873, enquiry held by the Local Marine Board, Newcastle. Charge of gross misconduct preferred against the first engineer of the *Serantes*. Certificate suspended for two months.

Artos.—On the 14th March, 1873, enquiry held by the Leith Local

Marine Board. Charge of drunkenness preferred against the first and second engineers of the *Artos*. Certificates suspended for three months and for six months respectively.

BOARD OF TRADE INQUIRIES AT HOME.

63. *Ceres*, of Belfast, foundered in Belfast Lough on the 19th November, 1872. Inquiry ordered 24th December, 1872, and held at Glasgow, before William Maclean, and John Marshall, Esqs., J.P., and Captain Harris and Commander A. J. Day, R.N. The Court were of opinion that, though deeply laden, there did not appear any motive on the part of her owner or master to send her to sea in an unseaworthy condition.

71. *Charles*, of Wexford, supposed to have foundered between Kingstown and Wexford on or about the 5th January. Inquiry ordered 23rd January, with Captains Harris and Hight as nautical assessors. Proceedings pending.

72. *Northfleet*, of London, in collision and foundered in Dungeness Roads on the 22nd January. Inquiry ordered 27th January, with Captains Harris and Hight as nautical assessors. Proceeding at Greenwich.

74. *Britannia*, s.s., of Glasgow, stranded on the island of Arran on the 27th January. Inquiry ordered 10th February, and held at Glasgow on the 12th, 13th, and 14th days of March, before A. Houston McLellan, Esq., and W. Somerville, Esq., J.P., with Captain Hight and Commander A. J. Day, R.N., as nautical assessors. Master in default. Bad navigation during thick weather. Certificate suspended for six months.

75. *Orion*, of Faversham, stranded at Auckland Island on the 11th of December, 1872. Inquiry ordered 14th February, but subsequently abandoned.

76. *Dasher*, of Amlwich, was abandoned off Kinsale. Inquiry ordered 15th February, and held at Bangor on the 28th February, before the Right Hon. Lord Penrhyn, and Lieut.-Colonel J. V. H. Williams, J.P.; and Captain Hight as nautical assessor. Master exonerated. Vessel became unmanageable through shipping heavy seas.

77. *Kate*, of Middlesborough, foundered off the Cork light vessel on the 8th February. Inquiry ordered 15th February, with Captain Harris and S. W. Snowden, Esq., as nautical assessors. Proceedings pending.

78. *Daring*, of Whitby, stranded on the Cross Sands on the 13th February. Inquiry ordered 27th February, and held at Whitby on the 10th March, before C. Richardson, E. Corner, and J. Beedham, Esqrs., J.P., with Captain White as nautical assessor. Master guilty of an

error of judgment in altering his course too soon during hazy weather, and not using the lead. Certificate suspended for three months.

79. *Laura*, of Woodbridge, abandoned about 12 miles N. by E. of Huntleyfoot on the 14th February. Inquiry ordered 27th February, and held at Woodbridge on the 17th March, before Rolla Rouse, Esq., J.P., and J. P. Fitzgerald, Esq., J.P., with Commander Albert E. Kay as nautical assessor. The Court found that the vessel was in a satisfactory state, that cargo was objectionable, that there was freedom from fraud on the part of the owners and crew, and that vessel was abandoned prematurely.

80. *Peru*, of Liverpool, abandoned in the Bay of Biscay on the 22nd January. Inquiry ordered 3rd March, with Captains Harris and White as nautical assessors. Proceedings pending. Captain Oates has been sent by the Board of Trade to survey the wreck.

81. *Chacabuco*, of Liverpool, in collision with the *Torch*, of Dublin, off Ormeshead on the 1st March. Inquiry ordered 4th March, and held at Liverpool on the 18th, 19th, and 20th days of March, before T. S. Raffles, Esq., stipendiary magistrate, with Captains Steele and White as nautical assessors. Mate of *Torch* in default. Want of a proper look out. Certificate suspended for 12 months.

82. *Knight Templar*, of Glasgow, foundered about 100 miles W. by S. of the Lizard on the 3rd of February. Inquiry ordered 4th March, and held at Glasgow on the 27th March, before J. R. Steward, and A. C. Holms, Esq., J.P., with Captain Steele and Robert Murray as nautical assessors. Loss of ship attributed to the weakness of design and construction.

83. *Staffordshire*, of Liverpool, abandoned in lat. 47° N., long. 15° W., on the 25th January. Inquiry ordered 6th March. Proceedings pending.

84. *Quail*, s.s., of Cork, stranded near Brixton, Isle of Wight, on the 3rd March. Inquiry ordered 8th March, and held at Southampton on the 18th March, and four following days, before W. Hickman, Esq., mayor, J. H. Cookesy, and A. Pegler, Esqs., J.P., with Captain Hight and Commander Tuke as nautical assessors. Want of caution on the part of the master, in not heaving the lead on approaching the Isle of Wight during a thick fog. Certificate suspended for three months.

85. *Star of the Sea*, of Liverpool, stranded at Soldier's Point on the 2nd March. Inquiry ordered 8th March, and held at Liverpool, on the 14th and 15th days of March, before T. S. Raffles, stipendiary magistrate, with Captains Steele and White as nautical assessors. Master in default. No precaution taken when the South Stack Light was shut. Certificate suspended for six months.

87. *Milton Lockheart*, of North Shields, stranded at Hornsea, Yorkshire, on the 26th January. Inquiry ordered 11th March, and held at Tynemouth on the 20th March, before J. F. Spence, and E. Shattons, Esqs., J.P., with J. F. Prowse, R.N., as nautical assessor. Master in default. No precautions taken during hazy weather, when approaching land. Certificate suspended for three months.

88. *Boyne*, of Scarborough, stranded at Mullion Cove, Cornwall on the 1st March. Inquiry ordered 11th March, and held at Greenwich on 9th April, before J. H. Pattison, Esq., stipendiary magistrate, with Captains Harris and White as nautical assessors. Mistake of master in backing to the windward. Master drowned.

89. *Lalla Rookh*, of Liverpool, stranded off Prawle Point on the 3rd March. Inquiry ordered 14th March, and held at Liverpool on the 24th and 25th days of March, before T. S. Raffles, Esq., stipendiary magistrate, with Captains White and Steele as nautical assessors. Master acquitted.

90. *John and Martha*, of London, stranded one mile S. of Flamborough Head on the 25th February. Inquiry ordered 13th March, and held at Maldon on the 26th March, before H. Ward, and H. T. Eve, Esqs., J.P., with Captain Hight as nautical assessor. Master guilty of neglect of duty in not using the lead. Certificate suspended for three months.

91. *Dorothea*, of Sunderland, stranded on Corton Sand on the 14th February. Inquiry ordered 19th March, and held at Sunderland on the 31st March, before A. G. McKenzie, and G. R. Booth, Esqs., J.P., with Captain Hight and Commander A. J. Prowse as nautical assessors. Casualty caused by not sufficient allowance being made for the strong flood tide running at the time. Certificate returned.

92. *Roath*, s.s., of Cardiff, damaged her boiler off the Wolf Rock on the 1st March. Inquiry ordered 21st March, with T. W. Traill and H. D. Grey as engineer assessors. Proceedings pending.

93. *R. W. Hodgson*, of South Shields, stranded on the Cantiago Rocks, 12th February. Inquiry ordered 24th March, and held at South Shields on the 28th March, before W. James and E. Moore, Esqs., J.P., with Captain Hight and Commander A. J. Prowse, R.N., as nautical assessors. Master's certificate suspended for three months, in not seeing that his orders were accurately carried out.

94. *C. M. Palmer*, of Newcastle, in collision with the *Larnax*, of Sunderland, in Gravesend Reach, on the 19th February. Inquiry ordered 24th March, with Captains Harris and Oates as nautical assesors. Proceedings pending.

95. *Talisman*, Liverpool, foundered in lat. 39° 53′ N., long. 10 27′ W.

Inquiry ordered 28th March, with Captains Hight and Steele as nautical assessors. Proceedings pending.

96. *Atlantic*, s., of Liverpool, stranded on Mars Head, Novia Scotia, on the 1st April. Inquiry ordered 4th April, but subsequently abandoned in consequence of an inquiry being held at Halifax.

97. *Florence Baker*, of Yarmouth, Nova Scotia, abandoned off Lundy Island on the 15th March. Inquiry ordered 3rd April, with Lieutenant W. H. Elton, R.N., and W. H. Neate, Esq., as assessors. Proceedings pending.

98. *Venus*, of Glasgow, stranded at Teneriffee, on the 1st March. Inquiry ordered 5th April, with Captains Harris and Oates as nautical assessors. Proceedings pending.

99. *Cheviot*, s.s., of London, stranded on Foreland Point on the 24th March. Inquiry ordered 3rd April. Proceedings pending.

100. *Triumph*, of Dartmouth, abandoned off St. Trevose Head on the 16th March. Inquiry ordered 7th April. Proceedings pending.

101. *Joshua and Mary*, of London, stranded on Gunfleet Sand on the 22nd March. Inquiry ordered 11th April, with Captains *Steele* and White as nautical assessors. Proceedings pending.

102. *Inchkeith*, of Grangemouth, stranded off Burnmouth on the 29th March. Inquiry ordered 11th April, with Captains Steele and Forster as nautical assessors. Proceedings pending.

103. *Ranger*, of Newcastle, stranded at Cullercoats on the 30th March. Inquiry ordered 16th April. Proceedings pending.

Inquiries Abroad.

138. *North East*, stranded near the Ratel River, Cape of Good Hope, on the 31st December, 1872. Inquiry held at Cape Town, before J. Campbell, Esq., resident magistrate, with H. Wilson, Esq., as nautical assessor. Error of judgment on the part of master during thick, hazy, and cloudy weather. Certificate returned with a caution.

139. *Winefred*, stranded in the Brisbane river on the 18th October, 1872. Inquiry held before the Queensland Marine Board. Vessel taken up the river loaded too deep forward.

140. *Elizabeth Brown*, stranded at Port Elizabeth on the 31st December, 1872. Inquiry held at Port Elizabeth, before A. Wylde, Esq., resident magistrate, and F. Skead, nautical assessor. Casualty attributable to the force of wind and sea. Master and mate exonerated.

141. *Royal Arch*, of Dartmouth, stranded 18 miles S. of the Bar of Rio Grande do Sal on the 24th November, 1872. Inquiry held at Rio Grande do Sal, before R. Callander, Esq., H.B.M. Consul, president;

R. Huxham, Esq., merchant, and A. Briard, master mariner. Master and mate censured. Miscalculation of the position of the ship.

142. *Southland*, of Leith, stranded near Cheefoo on the 10th December, 1872. Inquiry held at Cheefoo before C. W. Everard, Esq., Acting-Consul, president. Considering the heavy weather and the state of the current, the master should have kept more northward.

143. *Xanthos*, s.s., stranded at Port Gregory on the 17th November, 1872. Inquiry held at Freemantle, before G. Elliot, Esq., sub-collector of Customs, D. H. Scott, Esq., J.P., and J. Mackenzie, Esq., nautical assessor. Master exonerated, he having used all means in his power to save the ship.

144. *City of Newcastle*, stranded on Wellington Head on the 14th November, 1872. Inquiry held at New Zealand, before J. C. Crawford, Esq., J.P., R. Johnson, master mariner, and Commander R. A. Edwin, R.N., assessor. Loss of vessel caused by the negligence or incompetency of the master. Certificate cancelled.

145. *Benares*, stranded in the Loochoo Archipelago on the 8th October, 1872. Inquiry held at Shanghae, before W. H. Midhurst, Esq., H.B.M. Consul, president, Lieutenant F. T. Helby, R.N., and E. M. Edmond, master mariner. No blame attributable to either officers or crew.

Royal Navy and Royal Naval Reserve.

Abbreviations.—Ad., Admiral; A., Assistant; C., Captain; Cr., Commander; C., Chief; Cl., Clerk; Cn., Chaplain; D., Deputy; E., Engineer; F., Fleets; H., Hospitals; I., Inspector; L., Lieutenant; M., Midshipman; N., Navigating; P., Paymaster; r., Retired; S. L., Sub-Lieutenant; Sn., Surgeon; St., Staff; N. Inst., Naval Instructor; 1st Class A. E., 1st Class Assistant Engineer; 2nd Class A. E., 2nd Class Assistant Engineer; N. Ct., Naval Cadet; Ng. Ct., Navigating Cadet; R. N. R., Royal Naval Reserve.

Promotions.—**Ad.**—Thomas Miller, 1855. **R. C.**—Richard A. Powell, C.B., 1855; John Borlase, C.B., 1855; Vincent A. Massingberd, 1855; James Rawstone, 1855. **Cr.**—William H. C. Selby, 1863. **St. Cr.**—Frederick J. Ray, 1859. **L.**—Francis J. Gray, 1866, from Navigating List for distinguished conduct in action; Charles J. Reddie, 1869; Robert M. Rumsey, 1869; Henry H. Boteler, 1869; John H. Pelly, 1869; Harry L. Ross, 1869; Lawrence H. Eliot, 1869; Henry E. O. Neill, 1869; Alexander W. Ogilvy, 1869; Edward J. Bawtree, 1869; Charles Reeve, 1869; Arthur Furlonger, 1869; Edward J. L. de Watteville, 1869; Thomas H. L. Robertson, 1869; William P. Ponsford, 1869; Francis C. B. B. Simpson, 1869; Arthur H. Baker, 1869; Augustus M. R. Hamilton, 1869; John G. M. Field, 1869; Richard W. O. Voysey, 1869; Archibald K. Haranc, 1869; Lewis E. Wintz, 1869; George A. G. Grant, 1870; George F. Hall, 1870; Hon. Foley C. P. Vereker, 1870; Robert T. Wood, 1870; Arthur Bar-

row, 1872. **St. Sn.**—John Gray, 1855. **P.**—John Ashton, 1861; Clarence Aylen, 1861; William Lovely, 1861; Cuthbert R. Ridham, 1861; William H. J. Aitken, 1861; Horatio W. P. Kooystra, 1861.

APPOINTMENTS.—**C.**—William H. Blake, 1867, to *Druid;* James G. Goodenough, 1863, as Commodore to Australian Station. **Cr.**—John Ingles, 1872, to *Triumph;* Percy P. Luxmore, 1867, to *Argus;* Leicester C. Keppel, 1869, to *Achilles*, for coastguard; Dudley Court, 1870, to *Valorous;* Alexander Tupman, 1871, to *Royal Adelaide;* John Patton, 1867, to *Dasher;* Adolphus F. M. Meyer, 1869, to *Ready;* Richard Roche, 1864, to *Hibernia;* Cyprian A. Bridge, 1869, to *Implacable.* **St. Cr.**—John E. Chapple, 1870, to *Indus.* **L.**—St. Vincent Nepean, 1866, to *Devastation;* Adolphus F. St. Clair, 1870, to *Cambridge;* Harry F. Yeatman, 1861, to *Pembroke*, additional for Naval Reserve; John L. Burr, 1872, and Gordon C. Young, 1867, to *Argus;* Robert H. Eyre, 1866, to *Favorite;* William M. Carey, 1867, to *Niobe;* John A. Clifton, 1867, to *Achilles;* Graham J. Bower, 1872, to *Lord Warden;* Alexander K. Woodrow, 1872, to *Lord Warden.* Edward J. H. Preston, Royal Naval Reserve. **N. L.**—George Robinson, 1861, to *Fisgard*, additional for surveying service; James E. Barber, 1870, to *Wolverene.* **S. L.**—Henry G. Gray, to *Rifleman;* Lloyd F. Mathews, to *Duke of Wellington;* Alfred W. Paget, Henry H. Adamson, and Edward J. Sanderson, to *Argus;* Edwin J. P. Gallwey, to *St. Vincent*, for *Martin;* Thomas E. Cockrane and Frederick O. Pike, to *St. Vincent*, for *Martin;* Reginald C. Prothero, to *Impregnable*, for *Squirrel;* Lionel H. Morris, and Richard M. Mansergh, to *Implacable*, for *Scalark;* James N. Hart and Andrew T. Pringle, to *Ganges*, for *Liberty;* Arthur F. Graves, Hugh H. G. W. C. Massey, Edmund P. Brett, Samuel Ewing, and James W. Burder, to *Clio;* Richmond F. Powell, to *Glasgow;* Alfred A. Taylor, Richard P. Rennie, and James A. Ward, to *Rattlesnake;* Alfred A. Taylor, to *Argus;* Charles H. Cross, to *Argus;* William H. Hingston, to *Duncan;* Francis T. Brook, to *Ready.* **N. S. L.**—Charles F. Barnard, to *Rifleman;* Edward W. G. Hilliard, to *Rifleman;* Frederic J. Atkinson, 1869, to *Ready.* **M.**—William L. Down, Montague H. M. Gruggen, Alexander W. Pym, Henry Preedy, George H. Miller, and William W. Smythe, to *Triumph;* Gerald L. King Harman, to *Rattlesnake*, as supernumerary. **C. E.**—John T. Harris, 1872, to *Salamis;* William McDowall, 1867, and George Cook, 1857, to *Duncan*, for service in Reserve; John Brown, 1858, to *Terror;* William Glasspole, 1861, to *Invincible;* John Prowett, 1866, to *Resistance;* Charles A. Bidder, 1860, to *Valiant;* William Smiley, 1862, to *Pembroke*, for Newcastle. Thomas E. Miller, 1867, to *Malabar;* William Donnison, 1860, to *Indus*, for *Prince Consort.* **E.**—Richard H. Trabshaw, 1865, and William Gentle, 1868, to *Rifleman;* Henry G. Cocking, 1871, to *Barracouta;* William H. Green,

1862, and Ferdinand J. Fairelough, 1868, to *Favorite*, additional; Thomas S. Gissing, 1863, to *Nankin*, for *Fantome;* William T. Ray, 1868, to *Duncan*, for *Reserve;* George Weight, 1868, to *Rifleman;* John W. Dupen, 1871, and Stephen Sheldon, 1868, to *Iron Duke*, additional for disposal; Thomas M'Farlane, 1866, George G. Stronach, 1869, and Richard Nicholls, 1872, to *Ready*. **A. E. 2nd Class.**—William Bromley, acting, 1872, to *Rifleman;* William S. Stribbling, acting, 1872, William H. Mathews, acting, 1872, Richard S. Hamm, acting, 1872, to *Iron Duke*, for disposal. **I. G. H. F.**—William R. E. Smart, C.B., M.D., 1869, to Royal Naval Hospital at Haslar. **St. Sn.**—John T. Caddy, M.D., 1867, to *Dædalus;* Charles M'Shane, 1865, to Plymouth Hospital; Charles D. Sheppard, 1869, to *Audacious;* Robert W. Beaumont, 1869, to *Northumberland;* Frederic Harvey, 1861, to *Minotaur;* George J. Willes, M.D., 1867, to *Sultan*. **Sn.**—Leonard Lucas, 1868, to *Argus;* Francis H. Moore, 1867, to *Barracouta*, Simon A. Willis, M.D., 1862, to *Hibernia;* Robert Humphreys, 1865, to *Wolverene*. **A. Sn.**—George Kell, 1864, to *Rifleman;* John Stone, 1872, to *Argus;* George Gibson, M.B., 1872, to *Pembroke*. **P.**—John Ashton, 1873, to *Rinaldo;* Robert Deveson, 1855, to *Resistance*, for coastguard; Charles Sturgess, 1855, to *Impregnable;* Thomas D. Conconi, 1859, to *Duncan*, for service in Naval Barracks; William M. Shanks, 1854, to *Euphrates*. **A. P.**—Adolph Hunter, 1863, to *Fisgard*, in charge; Hugh A. Haswell, 1862, to *Fox*, in charge.

Retirements.—**Ad.**—Francis Scott, C.B., 1866. **C.**—Victor F. F. E. G. A. C. Friederich Count Gleichen, 1859. **L.**—Lynedoch N. Moncrief, 1865, as commander; Charles W. Last, 1868. **N. L.**—William T. Clifton, 1859. **N. S. L.**—Charles F. Barnard, 1867. **C. E.**—Jesse Bridgeman, 1859. **P.**—Henry Winstanley, 1864; William E. Sanders, 1851, as paymaster-in-chief; Edward J. Bennett, 1851, as paymaster-in-chief; Edward Faulkner, 1855; Charles Leigh, 1866; John E. Skinner, 1868; William C. Devereux, 1869; Barclay Corrie, 1870; Charles O. Salmon, 1870; John Hay (*h*) 1862; George M. Lang, 1851; Joseph Whittall, 1854; John Pittis, 1856; Francis Woods. **A. P.**—Charles Harvey, 1866; William J. Oliver, 1868; John B. Bradley, 1863; John S. Andrews, 1862.

Deaths.—**C.**—Alfred J. Curtis, 1857, *r.;* Henry Parker, 1864, *r.* **Cr.**—Charles B. Bayly, 1866, *r.* **I. G. H. F.**—Sir William Rae, Kt. C.B., M.D., 1849, *r.* **A. Sn.**—Frederick H. Rose, 1855, *r.* **P.**—Francis Lean, 1830, *r.;* James Towell, 1850; Frederick W. S. Ponsonby, 1863.

Maritime Law.

Refusing to Proceed to Sea.—James Powell, and seven other sailors, were recently charged with refusing to proceed to sea in the ship *Dorothy*, of Glasgow. It appeared that the prisoners signed articles to sail to Kingston, Jamaica, and the vessel got down to the Spit, where they refused to proceed to sea, alleging that the ship was unseaworthy. The complainant, the master of the *Dorothy*, then got two skilled persons to make a survey of the vessel, which is twenty-five years old, and he read the report of the surveyors, asking the defendants if they would go to sea when the requirements of the report were complied with. They said they would not go to sea, even if that were done. The surveyors recommended a new long boat, or the existing boat to be thoroughly repaired, and certain caulking about the deck. The two surveyors were examined as witnesses, and they both said if their recommendations were complied with, the vessel would be fit to go to sea. The case was dismissed, complainant to pay the costs.—(Newport, Monmouth, Police Court.)

Detention of Cargo.—The "San Ronan."—Anderson and others Appellants.—The Owners of the "San Ronan" Respondents.—*On* an appeal from a decree of the Judge of the High Court of Admiralty of England in a cause brought by the appellants against the North-German vessel *San Ronan*, under the 6th section of the "Admiralty Court Act, 1861," for the recovery of damages in respect of loss suffered by the appellants as owners of a cargo of spars laden on board the *San Ronan*. It appeared that the *San Ronan*, in terms of charter party, dated 13th February, 1869, proceed to Port Ludlow and shipped a cargo, which she was to carry to England with all convenient speed, but deviated from the agreed voyage by putting into Valparaiso for repairs, in August, 1870, where she remained for some time, whereby the appellants were deprived for a long time of the cargo. It was urged for the owners of the *San Ronan*, that, before her repairs were completed, war had broken out between Germany and France, and that the presence of armed cruisers made it unsafe for her to complete her voyage until the month of December, 1870, when she sailed from Valparaiso, and delivered her cargo. When the case was heard in the Admiralty Court, Sir R. Phillimore held that to be a perfect answer, and dismissed the suit. The appellant now appealed against that decision. Lord Justice Mellish delivered the judgment of the Committee. Their lordships confined themselves to the question whether the delay at Valparaiso was justifiable in the circumstances narrated, and they arrived at the conclusion that it was; and their lordships would, therefore, humbly advise Her Majesty that the decree of the Court of Admiralty be affirmed, and that the Appeal be dismissed with costs.—(Judicial Committee of Privy Council. Feb. 4.)

REFUSING TO GIVE UP SHIP'S PAPERS.—THE "CYPRIAN QUEEN."—The late captain of the *Cyprian Queen* collier, of Dover, was charged with refusing to deliver up to his successor the articles of agreement with the crew of his ship, and also the receipt for light dues received from the collector, the same being in his charge, contrary to the provisions of the Merchant Shipping Act. It appeared that the defendant, whose vessel after discharging a cargo of coals at Dover, was ready to proceed to sea on a fresh voyage, had refused to sail when requested by her owners. The vessel was detained at great expense, and the owners appointed a new master, to whom the defendant refused to deliver up the articles of agreement with the crew. The owner, in order strictly to comply with the terms of the Merchant Shipping Act, section 250, went, accompanied by the new master, who in his presence demanded the articles. Defendant refused them again, and was told that proceedings would be taken against him. He then said that he thought he had burnt them. A great deal of evidence was taken, after which the magistrates retired; and on their return into court, the chairman said the bench had not the slightest doubt that defendant ought to have given up the ship's papers. He had rendered himself liable to a penalty of £100, but the magistrates thought the demands of the case would be met if a fine of £20 were inflicted, £15 of which sum would be payable to the owners. In default, one month's imprisonment.—(Dover Police Court, Feb. 5.)

DAMAGE TO CARGO.—LIABILITY OF LIGHTERMEN.—WHITE V. HEDGES.—This was an action brought against the defendant, a lighterman and granary proprietor, to recover for damage caused to a cargo of barley in the defendant's barge *Perseverance*, by negligent mooring at the Eagle Wharf, Wapping. The barge, which was loaded with grain at the Millwall Docks, proceeded to the Eagle Wharf, where she was moored for the night, and as the tide fell she stuck in the mud and was prevented from rising with the tide, which flowed into her and damaged the grain. It was contended that the craft had been improperly moored by defendant's servants, that she was improperly watched, and that the defendant was bound as a common carrier to deliver the grain in the same state in which he received it, and was therefore responsible. It was submitted, on behalf of the defendant, that ordinary care and skill were used, that the accident was caused by the depth of mud at the wharf, that the employment of watchmen was unusual, and that he could not be treated as a common carrier, as lightermen, by the custom of the port, had an option for whom they would carry. The jury, after some deliberation, found a verdict for the plaintiffs, both on the ground that the defendant had received the grain as a common carrier and that there had been negligence in mooring the barge.—*(Court of Common Pleas, Feb. 18.)*

SHIPPING AND MERCANTILE GAZETTE CORRESPONDENCE.

(Reprinted by special arrangement with Sir WILLIAM MITCHELL.)

BRITISH SEAMEN IN FOREIGN VESSELS.—The master of a French vessel enters into an agreement in this country with three British subjects to assist in taking his vessel to Seville, at which place the men were to be discharged, and receive money due to them. The men implement their agreement by sailing in the vessel to the port of destination, but on arriving there the master refuses to part with them, or to pay the wages due, wishing them to proceed further in his vessel. Can these men obtain, or can they claim in Seville, the assistance of the British Consul, with the view of compelling the French master to fulfil his part of the agreement?—The three British subjects should go to the British Consul and claim his intervention with the French Consul. By the general maritime law of nations the law cannot be set in motion against a foreign ship in favour of foreign seamen unless with the consent of the accredited agent of the Government to which the ship belongs. This was so decided by the Admiralty Court in England in the case of the *Courtney*.

CO-OWNERSHIP ACCOUNTS.—In a coasting trader of about *220 tons*, in which W owns one-fourth share, and acts as ship's husband, *and C owns* one-eighth share, I have not been able to get any money or settlement *for* two and a half years. The captain settles with ship's husband every voyage. What steps should I take, and can I claim interest for the money due?—An application should be made to the Court of Admiralty, which has jurisdiction to settle all questions arising between co-owners, or any of them, touching the ownership, employment, earnings, or settlement of accounts.

STEVEDORE'S LIABILITY.—1st. At what point do the responsibilities of a stevedore cease, in respect to stowage of cargoes, when engaged by owners of ships for such service? 2nd. What difference (if any) when engaged for similar service through a charterer or broker, or under appointment of the latter?—1st. If the cargo is not properly stowed, the stevedore may at any time be liable for damage done at sea during the voyage arising from defective stowage. The liability, therefore, ceases when the cargo is at its destination, and without damage from the neglect of the stevedore. 2nd. The master (or owner) is not liable for negligence of a stevedore, when there is no contract with the merchants rendering him liable, if he (the master) did not interfere in the stowage. ("Blakie *v.* Stembridge," Common Pleas, June 24, 1859. A stevedore employed by the charterers, who undertook to load a cargo, was neither expressly nor by implication the servant of the shipowner, so as to make the owner liable for his default. ("Sack *v.* Ford," Common Pleas, Nov. 1862.) As regards the liability of the stevedore, there would be no difference in his liability by whomsoever employed.

WRECKAGE.—About ten miles off the Isle of Wight on Monday, 5.30 p.m., I saw some kegs floating, and, going easy at the time on account of thick weather, saw a cluster of kegs, which I supposed to be butter kegs. I stopped and lowered a boat, and picked them up, when I found them to be spirits, all tied to a rope, to the number of forty-three, nine of them being empty. For fear my men should get at them I placed them in a cabin and locked them up, keeping the key myself, and thinking I had a good prize to be delivered to the receiver of wrecks. On my arrival at Gravesend I went alongside the Customs hulk and made the usual signal for on officer, and, when asked what for, I told them of the spirits I had picked up at sea. To my astonishment, the tide surveyor, when he saw them, seized them as "illegal packages," and detained the ship, causing us to lose our tide, also taking them on shore, and sending an officer with us to London, but, at the same time, putting a stoppage on the ship until the Commissioners of Customs' decision. I was also told that, by an Act of Parliament, I had done wrong in picking them up, though I myself thought I had done Her Majesty's Customs some service by doing so. Though the ship is released, I had to make an application to get such done. Were the Customs right in seizing the kegs after my duly reporting them at the first Customs' station (Gravesend), and in placing a stoppage on the ship? Also, am I not entitled to salvage for the whole?—The 9th and 10th Vict., c. 99, with respect to wrecked goods, was repealed by the Merchant Shipping Act, 1854, Section 450 of which enacts that, "If any person not being the owner finds or takes possession of any wreck, he shall, as soon as possible, deliver the same to the receiver of the district within which such wreck is found." This applies to finding or taking possession of wreck within the three-mile limit. In our correspondent's case there was no fraudulent concealment, and he acted legally in surrendering the derelict to the officers of Customs at the first port he entered. The goods would be sold subject to the Custom House duty. He should at once apply to the Board of Trade, by whom salvage is paid in these cases, and not by the Commissioners of Customs.

OVER DELIVERY.—I sign bills of lading for a cargo of iron ore, for 294 tons, and on being weighed out at this port the ship turned out twelve tons over bill of lading, having been weighed alongside my ship. On presenting my freight-note to the merchants, they decline paying me for the twelve tons over. Am I justified in suing the consignees for the extra quantity delivered?—All cargo over the bill of lading quantity belongs to the shipper, and could be held to his order for delivery. Freight is due on all cargo in excess of bill of lading quantity.

GENERAL.

INSURANCE AND ITS PROFITS.

Mr. John Glover has just published a pamphlet, called, "The Plimsoll Sensation. A Reply." It is ably, honestly, and temperately written. As a specimen of the valuable matter it contains we reproduce the following passage:—

"Mr. Plimsoll does not seem to be aware that probably half the insurance done in London is not done at Lloyds, but with public insurance companies. How stand the facts regarding them?

"New insurance companies were brought out between 1870 and 1872 to an extent which shows that voyages generally are rightly performed, and that insurance is a highly profitable business. How else could the following table of new companies be accounted for? They would not be started to do bad business; and, I repeat, insurance business could not be good if rottenness or overloading were common.

Name of Company	Paid-up Capital.	When established.
Globe ...	... £100,000 ...	... June, 1870
Thetis ...	... 50,000 ...	... June, 1870
Merchants' ...	... 100,000 ...	... June, 1871
Realm ...	... 39,741 ...	... June, 1871
Imperial ...	... 72,512 ...	... February, 1872
Standard ...	... 100,000 ...	... January, 1872
Trident ...	... 50,000 ...	... May, 1872

"I am quite aware that the writer of the pamphlet from which I have quoted is somewhat concerned, but it is not chiefly about bad owners and rotten ships—it is about the extent of competition between underwriters lowering premiums to a point at which only the largest and best companies can make profit. Hence he tells us of some companies which have started and failed, and very properly warns promoters and others that such business, like all others, may be overdone. I therefore venture to trouble my readers with another list, which is not published either in Mr. Plimsoll's book or in the pamphlet from which I have quoted, but which all who would have an accurate, informed, and sound opinion regarding the general character of our maritime affairs must mark, learn, and inwardly digest. It tells us what we cannot know about the results of private personal underwriting at Lloyds—viz., the nett profits. They are far from unsatisfactory.

Frightful Cases of Overloading.—Mr. Plimsoll, M.P., in his speech at the annual meeting of the Royal National Lifeboat Institution, "dwelt on the constant peril to timber-laden ships carrying deck loads,

some of such loads, he said, being twenty to thirty feet high." This is the report of the honourable member's speech. Mr. Plimsoll deserves the thanks of the country for finding out these glaring cases, and he ought certainly to give the names of the ships so disgracefully loaded. Our excellent contemporary the *Shipping Gazette* has pointed out that such a deck load would reach well up the mainmast; and, much as we admire British pluck, we really do not think that British sailors ought to be allowed to go to sea in ships so loaded. The men would more resemble sparrows on a house-top than seamen on board ship. It is possible, however, that Mr. Plimsoll may have been misreported or misinformed.

Election in the Royal Naval Female School.—Some years ago the Committee of the Royal Naval Female School resolved "that the daughters of officers of the Naval 'Reserve' should be entitled to all the privileges of the institution." Several officers have availed themselves of this privilege by sending their daughters to the school, and paying the cost of their education. At the ensuing election of pupils, the first applicant for admission (on the foundation) from the "*Reserve*" will be a candidate. She is the daughter of the late Lieutenant Hinson, who died in the Red Sea, whilst in command of the merchant ship *Jumna*. The mother of the orphan girl is a respected gentlewoman, left with six children in very straitened circumstances. She has well trained and educated the candidate, and prepared her to join the school, if elected; and a kind relative has guaranteed the payment of the moderate school fees. The case of Miss Hinson has very strong claims on the mercantile community, and especially on the officers of the Naval Reserve. We hope our readers who are in the Reserve will come forward and qualify themselves to vote for Miss Hinson, and canvass for her, and thus secure to the orphan daughter of their deceased brother officer the benefits of a good education in a school standing so high as an educational institute.

Flashes of Intelligence.—Lighthouses.—In the March number of "Good Words" Sir William Thomson proposes that every lighthouse should be made to announce itself to passing ships by means of varied occultations of its light. From the depths of official oblivion he brings to light Professor Babbage's proposal, and suggests a method of utilising it advantageously for lighthouses in these days. The plan would be to give each lighthouse a distinguishing letter, and then by means of long and short flashes of light in accordance with the Norse alphabet, to make the lighthouse keep on repeating its own letter from sunset to sunrise. We cannot but think that in this proposal lie the elements of a satisfactory solution of the great question of distinctiveness. Our lighthouses are still increasing in number, but the means we have used of

distinguishing them admit no expansion; and it is not too much to say that the results of the attempts we have made to attain distinctiveness between our numerous lights are at the present shown in the cumbrous and complicated system, which has grown up with the gradual increase in our lighthouses. It requires a great deal of learning, it betrays an absence of all forethought or order, and as regards simplicity and efficiency, since they cannot claim a place in our existing so-called system, such a logical and complete arrangement as that proposed by Sir William Thomson will be hailed by all practical men as a boon to our Mercantile Marine. For long and complicated sentences we have no faith in its practical usefulness, but for the simple purposes of distinction it is undoubtedly applicable to both light and sound signals. Such a system, admirably adapted for lighthouses, might be specially appropriated to that service, and prohibited for any other. This would ensure perfect immunity against mistaking ship's lights for lighthouses, as the former would be fixed and the latter always occulting. There is a great deal in Sir William's suggestion worthy of serious consideration, and it is earnestly to be hoped that something may result from his very valuable and interesting article.

THE APPARENTLY DROWNED.—A remarkable instance of recalling life by medical skill has lately occurred in Brussels. An unfortunate workman, overtaken by drink, had fallen into the Canal of Charleroi, which passes through the lower part of the town, and his body was not recovered for some considerable time, when it seemed hopeless to attempt to recall the drowned man to life, and the bystanders, after exhausting the common remedies, came to the conclusion that the man was dead. By good fortune Dr. Joux, the medical officer of the third division of the Police of Brussels, was at home, and his assistance was called in, and at once he resolved not to regard the case as hopeless. For three hours, however, the most effective remedies suggested by modern science were applied in vain, when Dr. Joux determined to have recourse to a more stringent treatment, and proceeded to apply plates of iron heated to a white heat to the upper parts of the body near the more vital organs. After some short time, to the astonishment of the assistants, faint signs of breathing were observed, and in the course of half an hour the drowned man awoke to life. At the present moment he is perfectly restored to health, and the only inconvenience which he has sustained results from the severe cauterisation which his skin necessarily underwent. The novel treatment which Dr. Joux extemporised so successfully on this occasion may well deserve the attention of the Royal Humane Society.

THE

NAUTICAL MAGAZINE.

NEW SERIES.

JUNE, 1873.

THE SUPPLY OF BRITISH SEAMEN.

Report by Mr. THOMAS GRAY and Mr. R. G. C. HAMILTON, presented to both Houses of Parliament, by command of Her Majesty.

Board of Trade, 21st December, 1872.

SIR,—We were directed to take opportunities, whilst making our last tour of inspection of the Mercantile Marine Offices in the United Kingdom, to ascertain, as far as we could, whether neccessity exists for any action on the part of Her Majesty's Government, with a view to increase or improve the supply of British seamen for British merchant ships.

With a view to obtaining information, we called together at several ports, meetings of persons interested in the subject; but these public meetings do not by any means represent the whole of the inquiries we made, as we took opportunities of conversing with very many persons besides those who attended the meetings.

1. DEMAND AND SUPPLY.

The majority of the representatives of maritime interests are, as far as we are in a position to judge, of opinion—

(1.) That the British shipowner as an employer of labour should be left free to employ such persons as he requires to man his ships;

(2.) That no steps should be taken by the State which would have the effect of excluding the employment of foreigners in common with or in lieu of British subjects, or of regulating the number

and proportion of the various grades and classes of men serving on board; and

(3.) That, so far as the manning of British merchant ships is concerned, no steps are called for to increase, or to encourage by pecuniary aid, the enrolment of apprentices.

Whilst the above remarks convey the opinion of the majority, there is, however, an influential minority connected with the Mercantile Marine who urge that the British merchant seaman is not what he ought to be, either in physique or proficiency; that aid should be given to increase the number of apprentices serving on board British ships, with a view to increasing the number as well as the quality of British seamen; and that a stipulated time of service at sea or an examination should be required by law, before a seaman is allowed to claim wages as an A.B. This minority urge that many lives and much property are annually lost, and that our stability as a nation is jeopardised by the present (as they say) unsatisfactory state of our Mercantile Marine; and that for these reasons British seamen should be "encouraged." In this view, and in order to increase their number and efficiency, some law as to the compulsory carrying of apprentices should, they urge, be enacted or re-enacted, or some or all of the various methods which have been proposed, and which we mention hereafter, should be adopted. Even this minority, however, with some very few exceptions, urge that as British seamen are wanted for State purposes, anything done to increase their number and efficiency must be done by the State, and not exclusively by the shipowner, as an employer of special labour. So that even those shipowners who strongly recommend that the State should take steps to increase the number and efficiency of British merchant seamen, distinctly, almost to a man, object to the taxation of ships and shipping for the purpose. They say that the State is to be benefited, and that the State should undertake a complete national system, and should pay for it out of the national exchequer.

As between the British shipowner as an employer of labour, and seamen as labourers, skilled or otherwise, the State need not, and is not, asked to interfere. The question as to the number, rating, and efficiency of seamen serving on board British ships, occupied in the conveyance of passengers, merchandise, and manufactures must, in the opinion of the large majority, be settled like all other labour questions, by the law of supply and demand. It resolves itself into nothing more or less than a question of wages; a question which can only be settled in the same manner as other similar questions arising between employers and employed in all trades. In passing, it is worthy of note that, whereas so recently as 1854, the number of men to each 100 tons of shipping was 4·36, it is now 3·55, and a still further falling off may be confidently

expected, as the size of ships increases and mechanical appliances come into use.

On the general question of "nursing," or "forcing," or "encouraging" the Mercantile Marine, we think it right to point out that any steps taken by payment out of the Mercantile Marine Fund, or out of any fund, or by the nation, if effectual in increasing the number of British apprentices, will ultimately be of little avail, if and so long as the wages of skilled workmen and labourers on shore remain so much higher than the wages of seamen; and on this head it is a fact that cannot be overlooked that numbers of trained A.B.'s serve as firemen on board ships for the higher wages offered, and that many leave the sea, and take employment in numerous establishments ashore, where their handiness and general aptitude ensure them better wages than they can get in either steam ships or sailing ships.

The above, and the table of wages given us at Liverpool, prove that if the supply of British subjects manning British ships is short, it can be increased by a rise in wages.

A table of wages, compiled from official sources, is also given. It is worthy of observation on this head that seamen in the British merchant service get higher wages than seamen in any other merchant service, with, perhaps, the exception of the Mercantile Marine of the United States.

2. School Ships.

The state of the case as regards the ships on which boys are now trained for the sea is this; (1) that many of the ships are absolute prisons in which criminal boys are confined; (2) that others are industrial schools to which boys of the lowest orders, who are rescued from the streets or from their parents, are consigned; and (3) that others receive boys against whom their is no charge, and no taint of criminality. For "convicted" boys and for "consigned" boys, the ships receive aid on systematic plans recognised by the State; but for boys against whom there is no charge of criminality and no taint of vagabondism, the school ships altogether rely on voluntary contributions. The effect of this system is that at the present moment part of the criminal or *quasi* criminal population is indirectly forced into the employment of the British shipowner; whilst for the children of the honest and respectable poor in school ships, no encouragement is given by the State at all.

There is a strong opinion that as the State has determined that all children shall henceforth be taught, school ships afloat should, as regards educational grants and inspection, be placed on the same footing as schools ashore, so far as boys who are not convicted or are not consigned, are concerned. The boys turned out from these ships at present are often not so good as they ought to be and might be: and any system of aid and

inspection would not only assist the committees of the ships in a pecuniary point of view, but would lead to many improvements much needed. We made very carefully inquiry as to the value of training on board these ships, and we found that opinion was by no means unanimous as to the value of such training, as regards practical seamanship, or the class of boys turned out. But if the right class of boys are hereafter selected for school ships, and if, as is the case with the *Mars*, at Dundee, a square-rigged sea-going tender is provided, on board of which the boys, under proper guidance, may make voyages to sea, then we think that as schools these ships are the best sort of school for boys who have an inclination for the sea.

3. Foreigners in British Merchant Ships.

As regards foreign seamen in British ships, it was pointed out by certain influential gentlemen that the foreign element is a source of national danger, for that in the event of war, the foreigner would be wanted for his own nation, and our ships could not be navigated, and we might be starved for want of the food they ought to bring; and thus on national grounds the foreigner ought not to be allowed to serve in our Mercantile Marine. This point was very strongly urged.

But as against this we found that the shipowner is very glad to use the foreigner as a skilled labourer at any time, and naturally says, if the foreigner is to be excluded from serving on board British ships, the State must pay for the exclusion, and not the shipowner, and the State must find a skilled man in the place of the displaced foreigner.

As a matter of fact, the percentage of foreign seamen serving in ships registered in the United Kingdom bore in 1871 the same proportion as it did in 1860 to the number of British seamen in the same ships. There are now in these ships 199,738 seamen, of whom 17,765, or 9 per cent., are foreigners. If there is danger from the foreign element, it is, at any rate, not an increasing danger.

From the testimony we have collected, it is clear that foreigners, especially Danes, Swedes, Norwegians, Germans, and South and Eastern Asiatics, are for certain purposes as good as British seamen, so far as the wants of the British shipowner are concerned; they take lower wages, as a rule, and always excepting the British seamen in the Royal Naval Reserve, are spoken of as more tractable and more useful than the ordinary run of British merchant seamen. Owing to the influence of climate, Asiatics are better than British seamen in many cases. In some cases, the large ships of the Peninsular and Oriental Company and others, are manned entirely by coloured men (the officers being British) and the testimony of the officers of that company in favour of coloured men is conclusive. Any attempt to restrict the employment of foreigners

would, we think, be resented as an unjustifiable interference with the labour market.

4. Medical Inspection of Seamen.

One point very strongly urged on our notice at some ports is the necessity for instituting a medical examination of seamen before they are shipped for a voyage. Under the present law this examination can be made, provided the owner and the men agree to it, and the owner pays for it. Practically, the provision is a dead letter. As between the owner and the men, we should not recommend any more stringent law than the present; but a very important consideration has arisen—viz., that as the State pays very large sums for the medical and hospital expenses of distressed British seamen abroad, and for their maintenance and conveyance home, the State merely in the interests of economic expenditure might properly insist on a medical examination of seamen. The proposition fairly open for consideration is, should not the shipowner always be called on and required to pay for diseased sailors left abroad, unless he shows that he took the proper and necessary precautions to have his seamen examined medically before leaving the United Kingdom. In cases where, as in some of the regular lines, the same men serve for years in one employ, their characters are well known, and a medical examination is unnecessary and would not be enforced; but where seamen are picked up promiscuously, as they are in a majority of cases, the shipowner may reasonably be required to ascertain before shipping his crew that the men are fairly sound.

5. Alleged Deterioration of British Seamen

Great difference of opinion exists among shipowners, as to the deterioration that is by some so persistently alleged to have taken place in British merchant seamen. It is often asserted that the British seaman has suffered deterioration, and many allegations are brought forward to enforce this view; but the statements made to us are vague. Shipowners and old shipmasters seem, in some cases, to think that education has spoilt the British seaman, and in some cases has spoilt masters too. Against the charge of deterioration it is alleged that amongst the British seamen are to be found as many as good as ever, but that by a process of "natural selection" the good ones have got together, and the bad ones together, and that, owing to the present method of working ships, the seaman of the old school is no longer exclusively wanted, and is, at any rate, not wanted in such great numbers as heretofore. This is no doubt the correct statement of the case; the good seamen get into ships affording constant employment and making regular voyages, where they get healthy accommodation, good food, and good wages. The worse

seamen, or "half-marrows," as they are significantly called in the north-eastern ports, get together into ships where some or all of these advantages cannot be secured; and it thus happens that their comparative inefficiency is more apparent. Besides this, we learn that in many cases the accomplishments on which old sailors pride themselves are not of so great a value as they were. It is much better if a suit of sails is damaged, to let it go or stow it away and use another set, than to put hands to repair it on board a steam ship. In bygone times, when sails were used, and steam was not used, it was different. Wire rigging, steam cranes and winches, and machinery generally on board ship, and the construction of the ship, have calculated largely to render much old exclusive knowledge of less use than is the every-day knowledge now possessed by all skilled persons employed in labour. Now, repairs are effected in port, stores are always kept to replace stores destroyed, and hands are kept on shore for the purpose of effecting repairs. And it is because certain things that used of necessity to be done by sailors on board ship, are now done by craftsmen on shore, that the sailor loses his knowledge of these things.

It is urged that he is none the less valuable for this, for he does other and more useful things instead. He has now to use his brains more than of old, and his fingers less; and it is this falling off in handicraft, the neglecting of things no longer wanted, on board fore and aft steamers, for instance, and the falling off of personal peculiarity that once bespoke a sailor, that old sailors regard as "deterioration."

We inquired concerning the Naval Reserve, and we found universally that not only were the men in it better sailors than others, but that their connexion with the Reserve had further improved them. The Reserve men, when on board merchant ships, are stated to be more ready and quiet in obedience, more orderly and more respectful, and altogether more valuable than undrilled men. So far at any rate there can be no doubt that the merchant service has benefited by the Reserve.

6. Improvements in British Seamen.

A knowledge of the working of the provisions of the Merchant Shipping Acts had impressed our minds with the fact that, even if British subjects employed on British ships had, as has been alleged, degenerated as sailors, they had at any rate progressed in some other respects. On this point we have made special inquiry. We find beyond doubt that although it is a fact that many seamen who come home from a long voyage often get rid of or are relieved of large sums of money in one or two nights ashore, still, on the whole, British merchant seamen are better behaved ashore, and are less improvident than they were. When the Mercantile Marine Offices were first established, seamen were dis-

orderly, and often attended when drunk to sign articles or receive pay. This is not so now, for we found that at those ports where the Superintendent of the Mercantile Marine Office is known by the men to be strict in the management of his office, a drunken sailor seldom makes his appearance. And as regards provident habits, the returns appended show that nearly £40,000 passed through the seaman's savings banks in the year 1871, and that £66,418 3s. 3d. was standing to the seamen's credit at the end of that year, and that nearly £4,000,000 of money has been remitted by seamen to their families and friends between 1865 and 1871 by means of seamen's money orders. When it is borne in mind that a great proportion of this sum is saved from the clutches of crimps, clothiers, and other improper persons, and that the seaman himself effects the saving, it is only reasonable to assume that he has improved both in conduct and in financial thoughtfulness.

7. PROPOSALS FOR ENCOURAGING THE SUPPLY OF SEAMEN :—OBJECTIONS.

Having given above, in general terms, the substance of the evidence we have collected, it may be well to note in detail, while the facts are fresh in our minds, the nature of certain observations made to us; and to record representations urged on our attention. We are bound to do this, as we promised the various persons whom we met, that we would fully inform the President of the Board of Trade of the substance of the views they took so much trouble to express. At the outset we were ourselves of course in possession of the particulars of the various schemes and suggestions that had been made from time to time on the subject, and as we proceeded on our journey we heard many more. When, therefore, we called a meeting together, we explained the object of our visit; and we especially pointed out that we had not come to express our own opinions, but had come to collect information. We explained that the President had not decided to adopt any scheme, and we explained the proposals that had been made by various persons and at various times, and we invited discussion on the whole question.

The proposal to make a grant out of the Mercantile Marine Fund to training ships already established, whilst it was approved of by some, was objected to on the ground that any grant made to those ships ought to be from educational funds, as well as (in consideration of time afterwards to be served in the Royal Naval Reserve) out of the Navy estimates. The reasons urged were, that the object being national, the payments should be national, and should not be made out of a fund raised exclusively by taxation on ships and shipping.

A proposal to pay a certain sum out of the Mercantile Marine Fund to boys who may hereafter complete their term of apprenticeship in a satisfactory manner, which was made to us and which we fully discussed,

was objected to on the ground that it would tend to relieve the shipowner from paying a premium to his apprentices, and would merely shift the payment to a general fund; and as an employer of labour this would place the shipowner in a different position from that of all other employers of labour.

A proposal to make a payment out of the same fund to masters or shipowners who take apprentices which was also made, was objected to on the additional ground that no encouragement of the sort ought to be given from such a source, seeing that the shipowner would himself and of his own accord, if he found it to his advantage to do so, take and pay apprentices like any other employer of labour.

The proposal to go back to the compulsory apprenticeship law, whilst pressed with remarkable warmth and persistency by sailors of the old school, amongst whom are many shipowners who have served at sea as apprentices, was objected to equally strongly by others on the ground that a thorough seaman can only be made on a sailing ship, that steamers as a rule use seamen, and do not make them, and that to require steamers to carry apprentices would be to require them to bring up men, who would only be of use on board steam ships; whilst to require sailing ships to carry apprentices would be to require them to bring up men, who, when brought up, would be of more use in steamers than men brought up on steamers, and who would therefore be taken over to steamers. In short, that the sailing shipowners would be bringing up men for steam shipowners; but steam shipowners could not bring up men for sailing shipowners. On the other hand, some influential steam shipowners say that the men they can bring up in steamers are good enough for the majority of their crews; and that what they want in addition, they can now get, and as a matter of fact do now get by the inducement of higher wages, and the more constant, regular, and comfortable employment the good steamers offer.

8. Reserves of Merchant Seamen.

A question much discussed, and one occupying the minds of many persons connected with ships and seamen, was the question of reserves. The part of this subject on which we made special inquiry was, whether, assuming for purposes of argument that payment would be made from the Mercantile Marine Fund, or by the State in respect to apprentices or boys trained to the sea, the shipowner would object to their taking a month's drill in the year, or offer any objection to merchant seamen in the reserve taking their drill.

On this point, of allowing men to be withdrawn from the merchant service for a month in each year to take drill, there was a difference of opinion; but those who objected formed a very small minority. It

may be accepted that the shipowners as a body look on the reserve with favour; and would continue to offer facilities for training men. The question of reserves being once raised, many shipowners took the opportunity of urging their views on the point at length, and very strongly; but in most cases they declined to make any payment as shipowners; and were only willing to contribute as subjects in common with all other subjects. Their argument being, as before stated, that the question is of national, and not of class importance.

Our naval reserves are small, and it has been urged that they should be large; but it is said that before those reserves can be materially increased, merchant seamen as a body must be much improved; and it was said also that in the improvement necessary to make merchant seamen fit for the reserves, the shipowner discerns the means of improving the whole Mercantile Marine, and looks forward to some benefit, but only, he says, in common with benefits to passengers, underwriters, and owners of goods; and he will not pay specially.

And here we must point out that it never has yet been shown that sufficient reserves cannot be got from our present merchant seamen and fishermen. The question of improving the whole body of merchant seamen, and excluding foreigners from British ships, for the mere sake of getting sufficient accomplished seamen for reserves, cannot arise, until it has been conclusively shown that sufficient suitable men for the reserve cannot be found in the Mercantile Marine now.

9. Conclusions.

From all the information we have been able to collect, we think—

(1.) That the British seaman though he might be better has not grown worse, and is plentiful enough for the requirements of trade; but that if he is in some cases not good enough it is because inferior men, men who are unable to get good wages ashore, go to sea as "half marrows;" and if he is not as plentiful as he might be, it is because better foreigners are got at less wages. If it were an evil, from a shipowner's point of view, that "half marrows" and other such persons go to sea at low wages, and even if it were an evil from the same point of view that foreigners serve on board British ships, and if these evils required remedy, they would be remedied by attracting better men, and British subjects, by offering better wages:

(2.) We do not think that any steps are called for, in the present circumstances, with a view to assisting school ships out of the Mercantile Marine Fund. We think they ought to be assisted out of the Education vote. If the boys brought up on them are educated for the sea, they can go to sea; but if, as is often

the case, they are not educated for the sea, or are not fit for the sea, or do not like it, they can and do go into trades ashore:

(3.) If seamen, as they are at present to be found on board British merchant ships and British fishing vessels, are not accomplished enough for, or for other reasons cannot be used for the Naval Reserves, but if, taking them as they are, of all nationalities, they are sufficiently accomplished for the services of the nation as British seamen and fishermen, and evidence tends to show that there are plenty good enough for these purposes, then the nation and not the shipowner ought to pay to improve them.

Our practical conclusions therefore are—

1st. That for the purpose of our Mercantile Marine no case is made out for the interference of Government to increase the number or improve the quality of seaman serving on board British merchant ships:

2nd. That nothing need be done for undertaking the special education of persons going to sea as merchant seamen with a view to make them fit for the Royal Naval Reserve, until it has been first shown that there are not among our seamen and fishermen at the present time an adequate number sufficiently good for the purpose.

We have the honour to be, &c.,

THOMAS GRAY.
R. G. C. HAMILTON.

To T. H. Farrer, Esq., Board of Trade.

Among a number of appointments officially notified in the *London Gazette*, are those of Lord Chief Justice Cockburn as an extra member of the Civil Division of the First Class, or Knights Grand Cross of the Bath; and of three Indian officers, lately employed on special mission in Seistan, to different grades of the Star of India.

Italy: Examinations in the Merchant Service.—The Board of Trade have recently received, through the Foreign Office, a decree issued by the King of Italy, presenting rules for the examination in the various nautical schools and institutions, of candidates for licences as naval constructors, masters, and engineers in the Italian Mercantile Navy. Among other provisions of these rules, which aim at establishing a higher standard of examination, arrangements are made for establishing, at Genoa, a special course of instruction for first-class masters.

THE FIREWORKS OF THE *NORTHFLEET* RELIEF FUND.

THE loss of the *Northfleet* led to the collection of a considerable sum of money for the benefit of the survivors and of the relatives of those lost with the ship. The *Northfleet* Fund furnishes an example of the sympathetic character of the British public in a big sensation. But besides affording relief and valuable assistance to sufferers, the *Northfleet* Relief Fund has given Londoners two unexpected exhibitions. To one of these, the exhibition of models at the London Tavern, we referred in our last issue; to the second, the display of rockets, &c., on the Serpentine on the night of the 26th April, we are about to refer.

We had previously received a programme, and had found that the signals were to be exhibited, "weather permitting." This we thought meant if the weather were sufficiently boisterous to test the merit of any invention; and as we saw, about 8 p.m., that the night would certainly be fine, and that there would be no wind, we went home; but before doing so, and lest "weather permitting" should mean "weather being sufficiently fine to enable visitors to attend," we despatched an old seafaring gentleman as a special reporter. His report is as follows:—

"*Notes of Proceedings on the Evening of 26th April, at Lord Mayor's Fireworks.*—Proceeded on to Hyde Park at 8.30 p.m. Weather fine, but dark; no wind; water quite smooth. Obtained admission inside railings, opposite boathouse, on north side of Serpentine river. Small peninsula about fifty yards south. Large crowd of good-natured and loud tongued costers and others outside railings; much given to chaff. Plenty of lights on the island—white, green, and red—not in side lanthorns. At about 9 p.m. first mortar fired on isthmus. Flash light, magnesium and rosin, hoisted; made several uncertain flashes; then three weak lights, one above the other hoisted. This was 'No. 1, Vice-Admiral Hall's signal of distress, accompanied by rockets and blue-lights;' also accompanied by flashes from magnesium and rosin lamp; rockets very good, the three lamps very poor, and quite eclipsed by rockets. Rockets better without the three lanthorns, and quite sufficient—lanthorns would swing about in bad weather. Lamps *and* rockets put me in mind of a picture of woman and children round a saucepan in a kitchen, once saw described as 'A Saucepan with Figures.' Then another mortar; then flashes from rosin and magnesium lamp; then No. 2, 'said to be Vice-Admiral Hall's frame holding numbers, thus, 1, 2, 3;' figure 3 being put upside down, and looked like figure 8; at 100 yards distance, figures wholly invisible, looked simply like a white light then; quite useless for signals at a greater distance than conversation could be carried on by the voice at sea. Then a mortar;

the case, they are not educated for the sea, or are not fit for the sea, or do not like it, they can and do go into trades ashore:

(8.) If seamen, as they are at present to be found on board British merchant ships and British fishing vessels, are not accomplished enough for, or for other reasons cannot be used for the Naval Reserves, but if, taking them as they are, of all nationalities, they are sufficiently accomplished for the services of the nation as British seamen and fishermen, and evidence tends to show that there are plenty good enough for these purposes, then the nation and not the shipowner ought to pay to improve them.

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To T. H. Farrer, Esq., Board of Trade.

Among a number of appointments officially notified in the *London Gazette*, are those of Lord Chief Justice Cockburn as an extra member of the Civil Division of the First Class, or Knights Grand Cross of the Bath; and of three Indian officers, lately employed on special mission in Seistan, to different grades of the Star of India.

Italy: Examinations in the Merchant Service.—The Board of Trade have recently received, through the Foreign Office, a decree issued by the King of Italy, presenting rules for the examination in the various nautical schools and institutions, of candidates for licences as naval constructors, masters, and engineers in the Italian Mercantile Navy. Among other provisions of these rules, which aim at establishing a higher standard of examination, arrangements are made for establishing, at Genoa, a special course of instruction for first-class masters.

THE FIREWORKS OF THE *NORTHFLEET* RELIEF FUND.

THE loss of the *Northfleet* led to the collection of a considerable sum of money for the benefit of the survivors and of the relatives of those lost with the ship. The *Northfleet* Fund furnishes an example of the sympathetic character of the British public in a big sensation. But besides affording relief and valuable assistance to sufferers, the *Northfleet* Relief Fund has given Londoners two unexpected exhibitions. To one of these, the exhibition of models at the London Tavern, we referred in our last issue; to the second, the display of rockets, &c., on the Serpentine on the night of the 26th April, we are about to refer.

We had previously received a programme, and had found that the signals were to be exhibited, "weather permitting." This we thought meant if the weather were sufficiently boisterous to test the merit of any invention; and as we saw, about 8 p.m., that the night would certainly be fine, and that there would be no wind, we went home; but before doing so, and lest "weather permitting" should mean "weather being sufficiently fine to enable visitors to attend," we despatched an old seafaring gentleman as a special reporter. His report is as follows:—

"*Notes of Proceedings on the Evening of 26th April, at Lord Mayor's Fireworks.*—Proceeded on to Hyde Park at 8.30 p.m. Weather fine, but dark; no wind; water quite smooth. Obtained admission inside railings, opposite boathouse, on north side of Serpentine river. Small peninsula about fifty yards south. Large crowd of good-natured and loud tongued costers and others outside railings; much given to chaff. Plenty of lights on the island—white, green, and red—not in side lanthorns. At about 9 p.m. first mortar fired on isthmus. Flash light, magnesium and rosin, hoisted; made several uncertain flashes; then three weak lights, one above the other hoisted. This was 'No. 1, Vice-Admiral Hall's signal of distress, accompanied by rockets and blue-lights;' also accompanied by flashes from magnesium and rosin lamp; rockets very good, the three lamps very poor, and quite eclipsed by rockets. Rockets better without the three lanthorns, and quite sufficient—lanthorns would swing about in bad weather. Lamps *and* rockets put me in mind of a picture of woman and children round a saucepan in a kitchen, once saw described as 'A Saucepan with Figures.' Then another mortar; then flashes from rosin and magnesium lamp; then No. 2, 'said to be Vice-Admiral Hall's frame holding numbers, thus, 1, 2, 3;' figure 3 being put upside down, and looked like figure 8; at 100 yards distance, figures wholly invisible, looked simply like a white light then; quite useless for signals at a greater distance than conversation could be carried on by the voice at sea. Then a mortar;

then flashes from magnesium and rosin lamp; then Nos. 3, 4, 5, and 6, Nathaniel J. Holmes's flare signals—very good, burnt in the water brightly and steadily—no wind—good light. Then a cry of 'Fire up, Rogers,' and a mortar; then flashes with rosin and magnesium; then No. 7, Captain Colomb, R.N., 'Distress Flashing Signal Lanthorn,' turned out to be the magnesium and rosin lamp that had been making flashes and spirts all along; flashed a bit, but whether flashes were long or short could not always tell what was meant, for a long flash often looked like several very quick short ones; flickered very much, although on island; if rolling in a sea-way, flashes would be unintelligible. Then a 'Fire up, Rogers,' and a mortar; then more flashes by Captain Colomb. Then No. 8, Commander Blackwood, R.N., 'Helm Indicator,' could not be seen where I stood. Then *f. u. r.* and *m.*, and flashes and Nos. 9 and 10, Mr. T. Westhorp, coloured rockets and lights for distress, ditto for pilots—coloured lights the best and most powerful shown during the performance. Then *f. u. r.* and mortar and flashes; then Nos. 11 and 12, Mr. James Pain's 'Distress Signals Fired from a Gun or Mortar, and Pilot Rockets;' the distress signal from the mortar was the best distress signal of the evening—it also made a good report. Then a mortar; then flashes; then Nos. 13 to 20; Mr. Brock's rockets all good—the magnesium rockets of Mr. Brock were far the best rockets shown. Then mortar; then flashes; then Nos. 21 and 22, Thos. Gage's, distress signal and hand lights. No. 21 made good bang. Then mortar and flashes; then No. 23; rockets and blue lights nothing to speak of; then M. and F.; then Nos. 24 to 28. Mr. J. Wells', No. 27, magnesium signal, good, but evidently not better than a "long light." No. 28, aërial shell, a perfect shower of beautiful colours. Exactly the thing Jack would take Molly to see at Cremorne or Crystal Palace. Do for private signals. Too much for a signal of distress. Then M. and F.; then No. 29, Sir William Mitchell's red, white, and green flashes; very good, marked, and distinct, much more trustworthy than the rosin and magnesium flashes, if red and green will show sufficient distance. Stand from which this light exhibited appeared too weak; easily altered. Then M. and F.'s; then Nos. 35 to 39. Mr. Jesse Page. Snakes, No. 35; stripes, No. 36; sun, No. 37; flying devil, No. 38; chequer, No. 39. All seemed alike. Good fireworks for schools and tea gardens, but altitude not sufficient for distress signals. Then M. and F.'s; then Nos. 40 to 44. M. Ruggieri, of Paris. Rockets fair. Nothing out of way. Would do very well for signals; except two that did not go up, but burst on the island. Then M. and F.'s; then Nos. 45 to 48. Edward Tucker, "professor" of something. Nos. 45 to 48. One rocket with a very loud bang left dense patch of smoke in the air. Very good idea. Then M. and F.'s. Then No. 50 and 51, which could not find and did not see.

No. 52, a fog horn, which, if sounded, did not hear. Then M. and F.'s; then No. 53. Helm indicating apparatus was Mr. Reade's; now appears to have changed hands, and become Mr. Nickoll's. Very pretty arrangement as shown on the island to-night, but should say very difficult on board ship. Then M. and F.'s, and several fireworks, ordinary pretensions, and all over. After standing the whole out, think it was very kind of Lord Mayor to give the public a chance of seeing these things. Poor from Westminster had a real treat; quiet and orderly behaviour shows they deserve such treat more often. To sum up the exhibition. Every one of rockets and shells sent up would make good signal of distress, and all hand lights would make good pilot signals. Far ahead of all are Pain's shell, No. 11, best signals of distress, then Brock's No. 15 and 16; his parachute red rockets very beautiful, and No. 10, Westhorp's red hand light, and No. 20, Brock's magnesium light particularly good. These two used as private signals not to interfere with distress signals will be a boon to great ship lines. Capt. Colomb's apparatus flashing the whole evening, gave the public good opportunity of admiring. Take my word for it, Sir, never will do for the whole Mercantile Marine. Sir William Hall's 'three lanthorns,' if multiplied largely, would give a fleet fine appearance in calm weather; at sea and for any distance they would be useless. Gallant gentleman's method of signalling by numbers, cut out of tin plates, and put before a white light. Less said the better. 'Down again 4.' People from Westminster said, did not understand it so myself. Ludicrous mistakes made with Admiral's figures last night, even at distance less than fifty yards, figures exhibited at east end of Serpentine by gallant Admiral's method, invisible at boat house. Sir William Mitchell's system is very good. Eighteen flashes ought not to be necessary to make three letters. A drawback not to system of the red, white, and green signals, but to alphabet. Less complicated alphabet easily adopted before system is finally tried. Holms's signals make the best flare on a deck shown. Good distress signal, but should like to see it in a wind. Last night not sufficient wind to carry off offensive and dense vapour given off. Rogers's mortar and cone block with rope rove through it, was not tried before I left at night, but Lord Mayor's Committee say it *must* be superior to the rocket apparatus, at present in use for saving life from the shore. Simple nonsense, Sir. If they had used the apparatus as often as I have they would know better. Mr. Dillon tried the same thing more than fifteen years ago, and can testify to the correctness of my opinion. The cone block and mortar system, whether called Rogers's, or Dillon's, or Manby's, would be an excellent thing to be carried on board ship. A mortar throwing up Pain's signal shell would be the very best signal of distress for ships. A mortar

and shell has the double advantage of making *two* good reports, and when shells are all expended or in the daytime when they are not wanted, the mortar can be used without them as a good 'minute gun.' The mortar being once provided for signal of distress could then be used with the Rogers's cone, to carry a line to the shore, or to a boat, or to another ship. In old Board of Trade instructions surveyors were directed by Admiral Beechey, then an officer of the Marine Department, to recommend owners to provide a mortar so that it could be used for the very purpose of throwing a line as well as being used for a signal of distress. In these days of associations for saving life at sea, we are surprised that no company has been formed to bring the mortar and cone of Rogers to the notice of shipowners to be carried on board ship. The Turbine and Buffer Association may, perhaps, take the hint and add this apparatus to their other two. It would be sure of attention under their distinguished patronage; and Mr. Rogers's labours would in time be fully appreciated by the Association. Seen all before that was worth seeing last night. Home at 12.30."

ASSOCIATION FOR PROMOTING THE SAFETY OF LIFE AT SEA.

THE present agitation against shipowners is not confined to the proceedings of humanitarians at Exeter and other halls misstating fact, propogating fiction, and stirring up the working man against shipowners as a body, amidst the waving of handkerchiefs and umbrellas. On the contrary, such is the state of public sympathy that associations and societies and exhibitions, and almost anything having any reference or connexion more or less remote with the sailor, if brought to notice now, is sure to command public attention and support, especially if the safety of poor Jack is a prominent object. We have received a pamphlet, bearing in large type on the title-page, these words: "Association for Promoting Safety of Life at Sea. Objects of the Association. With an Appendix." The association is, we find, really a combination of good and liberal gentlemen who have bound themselves together with a view to bringing into use two inventions, and to do so at their own particular risk and expense, and absolutely without the remotest chance of any return for their outlay. The vice-patrons include 8 dukes, 1 marquis, 3 earls, 7 lords, 6 right honorables, 2 colonels, 9 admirals, 6 M.P.'s, and several C.B.'s. With such a list as this, who shall say that "poor Jack" is neglected? Our excellent contemporary, *Punch*, has already stated that Mr. Samuel Plimsoll is "a sweet *little* cherub;" and we may now assume that he, being a

member of this Association, at last sits "aloft," with other cherubs, "keeping watch o'er the life of poor Jack." Mr. Plimsoll's agitation is the *raison d'être* of the Association; but if he be a sweet *little* cherub, we certainly cannot call those great noblemen and distinguished gentlemen who figure in the list, as circling around the junior member for Derby, as "little" in the cherubic, or in any sense whatever. We have carefully considered the objects of the Association, and we find that in their opinion the philanthropic occupation of "watching o'er the life of poor Jack," is for the present deemed to be comprehended in a laudable endeavour to bring into practical and extended use Ruthven's "turbine" and Saunders's "spring-buffers." We have never yet found that the functions either of cherubim, or of mortals who are eminently philanthropic, include the compilation of statistics; but we did not expect to find dukes, marquises, earls, lords, right hons., colonels, admirals, and M.P.'s, putting forward to the world as one of the necessities for using "turbines" and *spring* "buffers," such a complicated assertion as that which occurs at page 7 of their pamphlet—viz.:

"An analysis of the late Report of the Board of Trade shows—that the number of *wrecks* during the five years ending in 1871 amounted to 9,025, and the yearly average to 1,805, being in the former case 3,797, and in the latter 760 in excess of the numbers during the five years ending in 1856; and this in an age in which science has gained in other fields such conquests!

"When, therefore, this Association places before the *generous* British public such an object, and at the same time adequate means to at least diminish this *terrible waste of human life*, and the legacy of sorrow and suffering which such calamities leave behind, the committee would implore you to liberally respond to this appeal, and, by doing so, enable this Association to carry out this too long lelayed, much required, and truly benevolent undertaking." (The *italics* are our own.)

We find as a matter of fact that the returns of the Board of Trade show that the wrecks *and casualties* during the last five years that happened, on and near our coasts, were 9,028, and the annual average of wrecks *and casualties* was 1,805: these are, therefore, the figures put forward by the Association; but the wreck register in the same opening that contains the *casualties* quoted, shows, also, that the *wrecks, casualties, strandings, and collisions* of British ships attended with loss of life on and near our coasts in one year, 1871, was 116. The Association, however, reject 116, and adopt 1,805, and, having adopted that number, they refer the "generous" British public to it as "*this* terrible waste of human life." It may, no doubt, be a good thing to introduce Ruthven's Turbine, and it may be a better thing still to enable poor Jack to relieve the tedium of a voyage by speculating on the exceeding efficacy of a

spring "buffer" (which, practically, is a very good invention, and ought to be far more used than it is); but we do not see why these laudable objects should be introduced to the public by a gross carelessness in stating fact, or under the device, carefully drawn on the title-page of the prospectus, of a bullock's heart spitted on an old-fashioned Admiralty anchor. We observe that there is as yet no president to this Association. Is it possible that the place is left vacant *pro tem.*, in the hopes that a gentleman of Royal blood may be induced to accept it?

A "turbine" is, no doubt, a good thing in machinery, and a "spring" buffer must be enough to send humanitarians into ecstacies; but we had much rather see advertised "*The-patent-reversed-and-ever-going-turbine-and-700-gallons-a-minute-water-and-sand-expulsion-over-the-side-apparatus:-and-adaptation-of-the-ever-to-be-depended-on-spring-buffer-and-anti-sinking-and-anti-collision-ship-company-(Limited)*" than to see advertised an Association under another name having the development of the turbine and spring buffer as its immediate object.

The "Turbine and Buffer Association," however, does offer great advantages at the present moment, and now we have quite explained what it is, and have given it its right name, we will advocate its cause. We feel that we could not do otherwise when we find amongst its vice-presidents several of our supporters. We expect that our advocacy will augment the funds of the Association. We advocate the Association because we believe that the hydraulic propeller is well worth a trial on an ocean-going merchant ship; and because we fear that without such an association as the present it never will be tried. And we advocate it further, because the present proposal of the Association affords shipowners an opportunity of making an experiment on the safety of seamen and passengers at the risk of a philanthropic Association, and absolutely without liability, beyond the amount of subscription. We would, therefore, ask the princely shipowners resident in Great Britain to add to the very large capital already subscribed by the vice-presidents, by sending £20 or £30 a piece to the Bank of Messrs. Barclay, Bevan & Co. We assure our readers that in doing so they will assist in testing what our own personal experience in a turbine ship has led us to believe an invention that may eventually turn out good for the commercial interests of our country. There can be no doubt that the "turbine" does not give out so much power for consumption of coal as a "screw" properly constructed; but the advantages of the turbine over the screw in other respects are worth consideration, and are honestly and modestly stated in the pamphlet we have referred to. We hope that we shall not have asked for assistance in vain; and that many persons will at once join the "Turbine and Buffer" Association.

One important consideration is that the ship built by the association is to be sold at the end of her first voyage, so that one voyage alone to Australia represents the amount of time and risk that will settle the question. That it will also lead to a repayment of the capital invested is problematical. We could not say less about this Association, and we cannot say more for the chief invention it is to work. There is, of course, one important consideration that we have not thought it necessary to advance, because we have no reason to suppose that every one of the vice-presidents has not settled it in his own mind. It is this. How far it may be wise or unwise to "improve" the present excited state of the public mind, consequent on the loss of the *Northfleet* and *Atlantic*, and on the recent dissemination of error as to the causes and magnitude of loss of life at sea, in order to press on the public and to force into the Mercantile Marine inventions whose merits have not in themselves been yet sufficient to secure adoption by practical men ?

THE MANGROVE.

SIR,—Most respectfully do I presume to draw your attention to what I am convinced is nothing but a poetical fancy regarding one of the causes by which land is formed, but which, though there is not the smallest foundation for it, has been so often repeated by scientific men of the highest reputation in botany, that it has become almost a creed with all true lovers of nature.

Ever since the time of Baron von Humboldt's visiting America, at least I cannot trace its origin farther back, all eminent botanists seem to have agreed in representing *the Mangrove* (Rhizophora mangle Linn.) and its congeners, as performing a most important part in the economy of nature in wresting annually fresh portions of land from the dominion of the ocean, and adding them to the domain of man! The manner in which these trees are supposed to effect this is described by naturalists of the highest authority so plainly and so convincingly, that it has become an incontestable fact, and no intelligent person dares even venture to hint a doubt on the dogma of the mangrove having been created for the especial purpose of forming land between the tropics without any human or other agency. After long and mature consideration of the subject, however, I feel bound to enter my solemn protest against this general illusion, and to declare that, so far from causing the formation of land, whole forests or jungles of them have not even had the power of retarding its disintegration, wherever the current or tide, deviating from some cause or

other in its former direction, approached nearer to the coast where they grew.

This will be readily understood, when the very singular manner in which the mangrove is made to reproduce or multiply its species is only a little more minutely investigated. The fruit germinating, while still attached by its peduncle to the axil of the branches, becomes a spindle-shaped club of about eighteen inches, pointed at its lower end, so that when it drops from the tree at last, it may penetrate through the soft surface of the mud in an erect position, where (if it is left at rest) it will catch root and become a tree. This description, as given in all botanical works, except the aforesaid condition, is all very correct, but what if the young sprout is *not left at rest*, and be shaken out of its hole by the waves? What if it drops into water too deep for its reaching the bottom with sufficient impetus to stick fast in it? Why, then it will float and drift away! The great mistake here made is to endow the tree with a species of infallibility, so that his offspring *must* become a tree under every circumstance, whereas, in fact, he will only do so after there has accumulated a bed of soft mud in front of the parent stem to receive and retain it *without its being disturbed by the water*, which, by its transposing power, either grants him room to grow or denies it to him.

In the fewest words, *mangroves are only one of the natural results, not the cause of land formation within the tropics.*

The first time my attention was forcibly drawn to this subject was in the year 1833, when on a voyage from Europe to Surinam. We made the land about Cayenne, and running down the coast, we found, after passing the river Marowyne, the ship's position, according to observation, when laid off on the chart, to be one or more miles in the interior, while as yet we were from four to six miles from shore. This strange result of our calculations, which was exceedingly puzzling to those who felt no trust in the accuracy of astronomical observations, we found to exist again and again, until we came in sight of Braamspoint, where even the large wooden beacon with painted boards, so as to resemble a ship under full sail, and erected there to mark the entrance of the river Surinam, after having been more than once removed inland, had at last been taken down altogether. With this, and some further information we obtained, it became evident we had been sailing the last two days where only a few years before there had been land.

In the course of the ensuing four years we often had to traverse the same route, on which occasions I determined the latitude and longitude of the few conspicuous spots which the uniform line of forest trees, marking this coast, presents to the view of the mariner by repeated observations, which were afterwards inserted in the "Columbian Navi-

gator," of John Purdy, Ed. of 1839, as also in the "Memoir to Accompany the Great Chart of the Northern Atlantic," by the same eminent hydrographer. In the first-named work I also added to my description and direction for the coast an accurate representation of Mr. Cameron's plantation, lying at the mouth of the river Metappica, as it appeared through a large gap in the forest, being then considered the best landmark to windward of Braamspoint. In all this I hoped to have performed something useful of a lasting sort, but in a few years after I had to experience the vanity of human wishes, for in 1843 my respected friend, the late Commander J. Modera, publishing a description of the same coast in Dutch, stated that Mr. Cameron's plantation looked already quite different from my drawing, by the removal of part of the buildings, and this was followed in 1853 by an official report of the commanding officer of the Dutch Naval Squadron stationed in the West Indies, wherein the following passage occurs:—"It is remarkable that, according to observation, the coast between Post Orange and Braamspoint appears to be constantly retrograding, from the effect of the current and the waves. Some years ago the plantation of Mr. Cameron, with its buildings, has been washed away, so that this landmark, engraved in nautical works, does no longer exist." (See "Verhandelingen en berigten betrehhelyh het Zeewezen," for 1853, Wed. Gerard Hulst van Keulen, Amsterdam.)

Sic transit gloria mundi! All my labour had been bestowed upon a tract of coast which was crumbling away by the hour, although thickly bordered by those very trees which even so late as the year 1855 are pathetically described as performing *a most important part in the economy of nature by wresting annually fresh portions of land from the dominion of the ocean and adding them to the dominion of man!** Why, they never did anything of the sort.

Finally, it is made manifest, from the best astronomical observations, that in the course of the last forty years this part of the coast of Surinam has receded in some parts from four to eight and even to twelve English miles.

Other statements, obtained from investigations made on shore, as far as the unmeasurable swamps and forests of the country admitted such, and corroborating the above generally, have been given by Mr. Voltz, one of a party of *Savans*, travelling in the interior of Guyana, in a report on the geology of Surinam, which appeared in a Dutch periodical started under the title of "West Indie," in 1854.

From this paper it appears that about Cape Nassau, in Essequebo, a remarkable *accretion*, of 200 metres in extent, had taken place in the

* Compare F. A. W. Miquel's "Flora Indiæ Batavæ," 1855. "The Vegetable Kingdom," by J. Lindley, 1853. "Frans Junghuhn Java Zyne Gedaante, Qyn Plantent ovi," etc., p. 259, 1854.

course of only six years, an incident which the learned gentlemen considered as altogether inexplicable, otherwise than by assuming that an upheaving of the ground was at work there! This, at any rate, proves them to have had no faith in the landforming mangrove theory, but at the same time they overlooked the transposing powers of water to seek for an upheaving of the ground in a country of alluvial formation, where rock *in situ* is first found at twenty-five miles inland from the coast.

As regards the coast of Surinam, we are informed "that its boundaries undergo a continual change, and although extension towards the sea has been during many centuries the general tendency, as appears from the ridges of shells in the interior, yet is the coast in some parts retrograding, especially to the north-east of Paramaribo, where the river Commowinie communicates with the sea, through side branches of the Warappa and the Metappica. At the mouth of the first-named outlet, whole plantations, as those called *Bremen* and *La Rochechateau*, have been washed away, together with the site of a military establishment, whilst on the opposite side, or left bank, more than 250 bunders (618 acres) from plantation *Alsimo*, have likewise disappeared. Wherever the coast projects outward, with an angle into the sea, such angle is soon frittered away, and the mud, and sand, with the remains of shellfish which composed it, is carried onwards by the force of the current, to settle in the bights.

In concluding these remarks, its author adds: "It is not doubtful to what these transformations must be ascribed, namely, *to the effect of the tides in connection with the great equatorial current*, which, running from east to west, sweeps along the coast of Guyana!" A sensible opinion, surely, which after all the trash we have heard about the land forming mangrove, sounds quite refreshing.

Having now shown by undeniable facts that mangrove trees, though growing as they here do, in compact jungle, cannot even prevent the disintegration of land, I will now, with your permission, proceed to prove that they are equally impotent in extending its borders, even under the most favourable circumstances; only please to follow me first to the isles of Roques, or Roccas, in the Caribbean sea, the loveliest oasis in the desert of waters to be found in any part of the globe, not even excepted the Bermudas, so charmingly depicted by the Irish Anacreon. Here some hundreds of emerald dots, the fishermen insist there are as many as days in the year, studding an immense sheet of liquid crystal, are protected from the fury of the waves by an extensive cirular reef of sunken rocks, marked only by an almost uninterrupted line of breakers, and which encloses them all around. The ingress to this enchanted spot is made by one or two passages, no more than about twenty feet wide, as if the great magician, who chained them in, lost a

couple of beads in the act, or left them out on purpose, for the accommodation of sea nymphs, coming to charm his solitude. To enter here requires a firm hand and a steady gaze in the helmsman, for if in the critical moment he swerves only a few feet on either side, his small vessel would, in the twinkling of an eye, be converted into driftwood, and not one of its crew left to tell the tale. However, the danger is past, as soon as the vessel has traversed its own length, when at once she will be gliding over the mirror-like surface of a lake, whose waters are so astonishingly transparent, that the smallest crabs and shell-fish are seen under every angle of depression, disporting themselves on the clean, sandy bottom, as if no intervening medium exists. Here the green and hawk-bill turtle, gamboling some fathoms below, may be seen looking up as through air, scrutinising the vessel moving onward far above them, or we may pass one of them, basking on the top of a sandy knoll, which he must have ascended by some marvellous feat, staring at us with great composure, and nowise scared at our sudden appearance. Approaching now the tufts of trees that seem to rise out of the water, we soon enter a complete labyrinth, which closed all around us, yet constantly opening a new passage, through which the experienced eye of our Dædalus, in the guise of a Saba-an fisherman, guided us with unerring precision, till, when near about sunset, he fairly pushed our schooner ashore, under a clump of trees, where we laid sheltered as in a bower. Not far from us a ponderous conch-shell (Strombas gigas Linn.) lay pensively among the empty habitations of his former friends, as if deeply meditating on the evanescence of animal life, while a crowd of large lobsters, huddled close together, round the elevated stem of a Rhizophora, were moving their antennæ at us, like saucy boys with their fingers, saying, "Walker." Some of these graced our supper-table ere long, after being cooked by a process, which, perhaps, no good cruelty-to-animals men might approve, but in its effect decidedly superior to any other. At sunset, clouds of birds, returning from their fishing excursion, came swarming in, and sought their roost in the trees; a large party, seemingly, not inclined to put up quietly with our trespassing upon their privacy, gave us some trouble by pitching right into us, and making an immense hubbub, but being received quite in a friendly way, they at last suffered us to remain undisturbed.

During the time I dwelt in this delightful abode, I had ample opportunity to observe the habits of the mangrove, conocarpus and others, natural to the shores of the tropics, bordering the narrow channels that separate these little isles, leaving barely room for a small vessel to pass, while the sails are trailing through the foliage. Surely if these trees really possessed the power ascribed to them, of all places in the world it should be here to see its effects, and these islands should be islands no longer, even

before the discovery of America, for here at least there is nothing to mar their natural propensities. Need I add that an aged fisherman from Saba assured me, annually to have visited these Roques during fifty years, but that in all that time, to his certain knowledge, no two islands had ever become united.

The same result I obtained, in the lapse of nine years, at Curacas, and more conclusive still, in the island of Java, whither I returned in 1851, after an absence of twenty-one years. The river and roadstead of Sourabaya I had known since the year 1822. A strong tide sweeps through the channel formed between the shore and the island of Madura. On the east side of the river, a large tract of land had almost suddenly been formed only by the current, leaving its old bed, depositing the detritus from the river there, so that a solid dike of sand and gravel was formed large enough to be converted into a naval dockyard. The mangroves made but a sorry figure there, for being cut off from the water, they gradually disappeared, leaving the extensive marshes which they had skirted in possession of the *Nipa* or *mud palm* (N. fruticans). The mangroves, however, continued to flourish, together with *bruguieras*, *egiceras*, *lumnituras*, *derris*, &c., &c., on the west side of the river, but never advancing beyond high-water mark, between which and the low-water line there exists an extensive muddy flat, which, being overflowed at every tide, carries no vegetation upon it whatsoever. So I found it in 1822, so I left it in 1872.

I trust now to have made out my case, though I cannot say to rejoice in it, for there is no pleasure in destroying other's fancy; but what is the use of science if it does not dispel futile notions, which, as in the present instance, cannot have originated but in the lively imagination of some great master in the art of painting nature, and from him copied, again and again, by authors in Europe, who could not judge of the matter from their own observations, or by scientific travellers, who thought it meritorious to follow their great master, even where he had been mistaken. Methinks, however, after three-quarters of a century undisputed sway, it is high time for the learned in the natural sciences, to reconsider the subject, and restore the honour of forming land, undivided, to the transposing power of water, which, as far as regards the tropical regions, has been erroneously bestowed upon the Rhizophora.

Believe me, most respectfully, your obedient, humble servant,

A. M. BISSCHOP GREVELINK.

Delft (Netherlands), 10th April, 1878.

OUR GREAT PORTS.

Glasgow and the Clyde Ports.

The derivation of the name of Glasgow is not known precisely. By some it is said to mean, in the Gaelic language, the Grey-smith. By others it is said to be derived from the word "Clais-ghu," or the dark ravine. There is a tradition extant that the Romans had a "station" on the present site of what is often called the "ancient" city of Glasgow. The first historical notice of it is in the sixth century, when a bishopric is said to have been founded there by one of the famous Culdees—St. Kentigern or St. Mungo. Its charters are of an early date. So far back as the period 1174—1180, William the Lion granted one, and made it a "free burgh of barony." Other charters were granted by the reigning monarchs in the years 1190, 1450, 1611, and 1690. By the last named, the citizens have the power to elect their own public officers for local administration. The arms of the city are singular. They are: an oak tree, a bird, a bell, and a salmon with a ring in its mouth. The motto being, "Let Glasgow flourish."

Little trading importance seems to have been attached to it till after the Reformation. Previous to that period the principal feature of commerce was the curing of fish—mostly salmon and herring. The origin of the "foreign trade" is somewhat interesting. Walter Gibson, a merchant, first laid the foundation of it. About the year 1668, he exported, in a Dutch vessel, 300 casks of herrings to St. Martin's, in France, where he got a "barrel of brandy and a crown for each." This return cargo was sold for a good sum. He then launched further into the "foreign" business, and traded to Europe and Virginia. At that time the ships were loaded and discharged at Cunningham, in Ayrshire, some fifty miles off, and the goods transported in flat-bottomed boats, or by land carriage. It was then that the harbour at Port Glasgow was projected. A charter was obtained by the Glasgow corporation to make this haven on certain lands in the parish of Newark; and it was declared "a free port." For a considerable time it was considered a better one than even that of Greenock —constructed about twenty years later—and it was less than half the distance of Cunningham from the Broomielaw quay. Greenock was then only a fishing village. It was in 1697 that the first attempt was made to do any other business. In that year a salt works was erected, and three years later power was asked to construct a harbour, but, through the jealousy of the Glasgow magnates, who had then constructed Port Glasgow, the grant was refused. This did not daunt the people of the town, for they entered into a voluntary compact, which was to take the place of Parliamentary powers, to assess themselves at the rate of 1s. 4d.

on each sack of malt brewed for ale, to raise the necessary funds for the harbour works. It was then the common practice to drink ale as a beverage in Scotland, otherwise this assessment would not have yielded the necessary amount. In 1707 the works were commenced, and 10 acres were enclosed within two circular quays, at a cost of £5,555. This noble effort on the part of the inhabitants was amply repaid in a greatly increased trade, which in 1740 yielded sufficient to clear off the whole of the harbour debt. This prosperity has continued up to the present time. In 1815 a new custom house had to be built, at an expense of £30,000. It is the handsomest building of the kind in that quarter of the kingdom.

Returning to the period when Glasgow was dependant upon those outlying stations for a refuge for her shipping, it will be observed that the depth of water in the Clyde, between those places, was so small, that up to 1775 it was navigable for vessels of very small burthen. In that year, Mr. Golborn, of Chester, commenced those improvements, which have since been continued by various engineers, amongst whom were Rennie and Telford; and which now enables the largest class of vessels in the Mercantile Marine to come up to the Glasgow quays. Previous to those works being commenced, the celebrated James Watt had surveyed the river, and reported that, for two miles below the city, there were only two feet of depth at several places. How changed the face of things is now at and below the Bromielaw, it is superfluous to say. The thousands of tourists, who yearly visit that gravitating centre of travelling, come away charmed, and ever after rehearse with admiration, the surprise they experienced at the tremendous bustle of commercial life and activity existing amid the most enticing scenes of nature. The great changes that have been thus effected are due greatly to the science of engineering. On the report of James Watt, an Act of Parliament was obtained to deepen the river, and for nearly a century (within two years) the unceasing work of dredging and embanking has been going on at a heavy outlay, until now for miles the river is like a vast dock, without the inconvenience of gates, basins, and locks.

The union of Scotland with England, which dates from the 1st May, 1707, forms an epoch in the history of Scotch commerce, and especially that of Glasgow. The colonial ports were thus thrown open to the merchants there, who immediately commenced a lucrative trade with Virginia and Maryland. They sent out various kinds of goods, and imported tobacco in return. This trade succeeded so well that it excited the jealousy of English traders. The Bristolians presented, in 1717, a petition to the Commissioners of Customs, praying them to check the business at Glasgow. This was wisely refused, and, in 1721, a similar memorial from Liverpool and Whitehaven met with the same fate. The persecution, however, did not terminate here, for,

in 1722, the House of Commons, being moved thereto by those interested, sent out a Commission of Inquiry, which recommended a set of Excise rules, the adoption of which dealt a heavy blow at the tobacco trade of the port.

As a compensation for the depression which ensued, about this time were begun those manufacturing processes which have since been so much esteemed. In 1725, lawns, cambrics, &c., were woven for the first time there, and these and similar manufactures succeeded so well, that Glasgow may be said to have been much more of a manufacturing than a commercial city up to the time of deepening the river.

In 1732 a trade in sugar was opened up with the West Indies; but the tobacco trade formed the principal feature, until the disastrous war with the American colonies broke out. A distinguishing trait, at that time, in the mode in which the Glasgow merchants carried on their business was this: Factors or agents were stationed at various points in America, the East and West Indies, and on the Continent of Europe, and a large amount of goods, but principally tobacco, would be bought and transmitted in Glasgow ships, without ever visiting their own port. For instance, many such vessels were loaded and unloaded in London. This is a common practice with shipowners now, but not so much so was it the case in those days.

Glasgow itself became a sort of port of transit for tobacco, as the most of it received there was re-exported to the Continent. Notwithstanding the check received by the fiscal restrictions imposed in 1722, the business had increased again so much that no less than 50,000 hogsheads of tobacco were imported annually (forming about half the whole import of Great Britain), up to or about the breaking out of the American War in 1775. This business then received a severe blow, but the traders of the place showed the elasticity of their enterprise by turning to new fields for employment. Again, when the external trade was restricted, relief was found in those internal resources, which, after all, generally confer more extensive benefits upon the populations of towns, *i.e.*, the manufacture of various tissues, such as linen, cambric, cotton, &c. It was not long after this period that the power-loom was introduced, which has caused such a revolution in many of the commercial centres of this island. The cultivation of this branch at Glasgow has been extensive. According to a Parliamentary report made in 1834, it appears that, excepting some works at Aberdeen, the sole manufacture of cotton in Scotland was confined to the Clyde towns and their neighbourhood. The import of it in 1775 was only 503 bags. In 1834 it reached 95,703 bales; and, as nearly a fifth of the total imports of that article into the United Kingdom is made there, it cannot fall short of half a million bales per annum at the present time. It is curious to note in the annals of the cotton trade that Dr.

Cartwright first succeeded in weaving by machinery in the year 1785; but did not succeed in making a commercial success of it. It was not till 1801 that this was done, when Mr. Monteith, of Pollokshaws, Glasgow, fitted up 200 power-looms, and fairly got them to work as a profitable investment.

A Chamber of Commerce was established at Glasgow so early as 1783. It had for its object the fostering of the commerce of the city, and well it has carried out its purpose. The founding of such an institution cannot be too highly appreciated, as it unites the merchants and traders in one common bond of unity, who by the "shoulder-to-shoulder" principle can obtain advantages for a town which, separately, they could not accomplish.

Next to the river improvements on the west, the canal communication opened with the east coast stands prominent as one of the external advantages accruing to the development of the trade of the port and city. This was effected on the 29th July, 1790, in the shape of the "Forth and Clyde Canal," extending from the port of Grangemouth, at one end, to the outlet of Bowling, on the river Clyde, at the other. For many years, until the railway to Edinburgh was opened on the 21st February, 1842, it was the principal means of carriage for heavy goods from the one coast to the other, as vessels carrying about 100 tons dead weight can be locked through this canal.

In the year 1812 the first steamer seen in this hemisphere was launched on the Clyde at Helensburgh. This was not only an event in the annals of the Clyde, but an epoch in the commercial history of the world. Since that eventful day what numbers of vessels of splendid form and achievement have been launched at or near that same spot! In one day, in 1812, one tiny river boat was thrown on the welcoming waters. In one day (31st December) in 1872, no less than 112 steamers of the aggregate tonnage of 165,270 tons were building on that same river.

This is surely a "development" "with a will;" and the fame of these vessels has spread over the whole world, whether they are heard of as men-o'-war, as "liners," or "blockaders."

The chief articles of import at the Clyde ports are cotton, sugar, rum, tea, tobacco, and timber.

The exports consist for the most part of cotton manufactures, refined sugar, soap, glass, iron, ropes, coal, leather, chemicals, machinery, vessels, spirits, &c.

There are rich deposits of iron ore and coal in the neighbourhood, and now the iron trade seems to bid fair to surpass all others for wealth and extent. Villages, and even towns, may be said to have sprung into existence in the county of Lanark, from the unprecedented development

of this branch of business within the last decade. The coal raised is of course principally used for home consumption, but a considerable quantity is also exported. The Parliamentary returns show there were sent to foreign ports from the following ports of this staple—

	1863.	1871.
Glasgow	98,081 tons.	152,386 tons.
Greenock	62,117 ,,	103,819 ,,
Port Glasgow	10,331 ,,	16,294 ,,

Coastwise, for the same years, there were sent—

	1863.	1871.
Glasgow	112,344 tons.	159,110 tons.
Greenock	10,895 ,,	12,346 ,,
Port Glasgow	——	650 ,,

The other statistical features of the trade, &c., of those ports are remarkable.

Of vessels registered, there were at—

	Glasgow.		Greenock.		Port Glasgow.	
	Vessels.	Tons.	Vessels.	Tons.	Vessels.	Tons.
In 1656 ...	12 ...	957 ...	—	—	—	—
,, 1846 ...	512 ...	134,603 ...	437 ...	81,873 ...	67 ...	13,009
,, 1861 ...	678 ...	218,567 ...	387 ...	79,892 ...	49 ...	2,745
,, 1871 ...	895 ...	433,016 ...	365 ...	120,604 ...	85 ...	14,332
,, 1872 ...	909 ...	444,581 ...	373 ...	127,952 ...	36 ...	16,150

There were entered inwards in the foreign, colonial, and coasting trades—

	1849.		1861.		1871.	
	Ves.	Tons.	Ves.	Tons.	Ves.	Tons.
At Glasgow ...	3,106	517,007	3,510	656,418	3,451	1,119,262
,, Greenock ...	1,230	174,892	1,761	291,009	2,195	471,709
,, Port Glasgow	133	43,499	75	36,333	40	33,528
Total ...	4,469	735,398	5,346	983,760	5,686	1,624,499

Of the same trades cleared outwards there were—

	1849.		1861.		1871.	
	Ves.	Tons.	Ves.	Tons.	Ves.	Tons.
At Glasgow ...	5,306	674,565	5,362	932,939	5,833	1,522,215
,, Greenock ...	548	100,893	1,157	217,881	1,051	266,522
,, Port Glasgow	58	28,470	47	19,409	48	35,325
Total ...	5,912	803,928	6,566	1,170,229	6,932	1,824,062

Of the vessels built there were—

	1867.		1872.	
At Glasgow ...	112 ves.	58,741 tons.	131 ves.	114,808 tons.
,, Greenock ...	26 ,,	8,653 ,,	24 ,,	19,641 ,,
,, Port Glasgow	28 ,,	11,916 ,,	35 ,,	18,709 ,,
Total ...	166	74,310	190	153,158

The Customs' duties collected amounted to, for years ended—

	31st March, 1858.	31st Dec., 1865	31st Dec., 1872.
Glasgow ...	£780,751	... £725,293	... £1,033,181
Greenock ...	501,114	... 1,222,480	... 988,104
			31st March, 1873.
Port Glasgow	78,191	... 100,382	... 19,413
Total ...	£1,360,056	£2,048,155	£2,040,698

The returns of population show that at Glasgow there were—

In 1560	4,500 persons.
,, 1660	14,678 ,,
,, 1801	77,385 ,,
,, 1831	202,426 ,,
,, 1861	394,864 ,,
,, 1871	477,144 ,,

These returns do not adequately represent the large amount of population around the city. There are numerous villages and townships which are incidentally connected with, and interested in, the commerce of the port, but which are not included in the above statistics. Of such are Airdrie, Coatbridge, Paisley, Renfrew, &c. The two latter are, in point of fact, part and parcel of the city and port of Glasgow, being connected almost uninterruptedly by buildings. It would, therefore, be only fair to take the population of the port as being formed as follows:—

Glasgow, 1871	477,144 persons
Paisley, ,, ...	48,257 ,,
Renfrew, ,, ...	4,162 ,,
Total Glasgow	529,563 persons
,, Greenock	57,138 ,,
,, Port Glasgow	10,805 ,,
Total Clyde ports ...	597,506

The difficulty of navigating the Clyde a century ago has been already

mentioned. Two centuries ago the first efforts were made to clear away the obstructions in the river by the united efforts of the burghs of Glasgow, Renfrew, and Dumbarton. This was done by cutting through some "fords" which hindered the passage of the "flat-bottomed" boats then used for the transport of goods. The first Act of Parliament to dredge the river was obtained in 1775, and large sums have been expended thereon, from time to time. The revenue from harbour and river dues was placed in the hands of trustees, who were members of the corporation. This arrangement was varied, and now the management is termed "The Clyde Navigation Trust." In 1858, a Consolidation Act was obtained by which power was given to levy rates on goods and vessels using the river and harbour. Since the beginning of the trust, the sums expended for all purposes connected with the river and harbour amounts to £5,594,981. That received in dues to £3,586,068, and in loans, £2,008,958. The revenue may be thus compared:—

Year ended 30th June,	1858	...	...	£78,783
,, ,,	1872	...	...	174,000

showing a large increase. The harbour proper of Glasgow extends about 2½ miles; but the jurisdiction of the Clyde Navigation Trustees extends for 18 miles. They have power to still further deepen the river to 17 feet at neap tides, it being 13 feet at present opposite Renfrew; and they now propose, in the present session, to take further powers for increasing the quay accommodation, extend the river wall, build another graving dock, improve the Stobcross harbour, especially for the use of coasters, and otherwise to improve the harbour at an estimated cost of £322,573.

The immense work which is being carried on may be conceived, when it is mentioned that, in *one* year, 1871-2, no less than 992,354 cubic yards were lifted by the dredgers from the river-bed, and deposited on the banks. The cost of this operation is found to be 7·304d. per yard.

During last year, great apprehensions were entertained as to the state of relations between the masters and workmen in the great industries of shipbuilding and marine engineering on the Clyde. The cloud which seemed so heavy at the beginning of the year happily cleared away, and 1872 turned out to be one of the most prosperous years in those departments. The tonnage launched exceeded that of the two previous years by a large figure. There is one noticeable feature in these returns, that not a single war vessel was launched on the Clyde, in 1872, whereas, six in 1871, and three in 1869, were built there. It is to be hoped that this is a sign for peace. Another point to be observed is that the screw boats appear to be usurping the place of the paddle ones altogether; and "composite" ships appear to be vanishing from the builder's list. In yacht building, the Clyde bears away the palm, having built no less than

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twenty-eight last year. But it is amongst large iron screw steamers where the great pre-eminence of the Clyde is seen. One firm, alone, "The Pacific Steam Navigation Company," of Liverpool and Birkenhead, had no less than seven such vessels, measuring 19,245 tons, built there last year. That company has had nineteen vessels, of 51,580 tons, built there in the short space of four years. Last year, the Peninsular and Oriental Company, of Southampton, had four steamers, making a tonnage of 11,470 tons. A fleet of forty Clyde built vessels, since 1862, has the "Anchor" line of Glasgow had supplied to them, four of which, equal to 11,370 tons, were added in 1872. There were other customers from, not only the ports of the United Kingdom, but from the principal states of the world, showing the estimation in which the builders of the Clyde are held for this class of industry.

The success of Glasgow as a commercial community has mainly depended on the spirit, talent, and enterprise of her citizens. Having a limited area for agriculture, and little "home trade," owing to the sparseness of population, a century ago she had to depend on a "foreign" and a "carrying" trade for future greatness, and these have been created. There is no port in the Kingdom that has had more natural difficulties to contend with—difficulties that well might seem insuperable. On the west coast she was situated fifty miles from the sea, and at least twenty miles from a decent harbour. How this has been surmounted let the "dredger" tell. On the east coast she was equally debarred from a trade with the Baltic and the German States by the inefficiency of the then modes of transit. The latter difficulty was also got rid of by the construction of the "Forth and Clyde Canal," thirty-five miles in length, which was subscribed for by her merchants, and took twenty-two years to complete. Her enterprise has been already indicated by the success of the tobacco and sugar trades, the cotton manufacture, and the iron and shipbuilding business. But her talent and genius have had frequent illustrations. Here James Watt invented the steam engine, and on the waters of the Clyde the first steamer built in Britain cut the waves. Here have been many inventions first brought to light. Of such were the invention of tambouring, a new dyeing process, the manufacture of water-proof cloth, the introduction of power-looms, the application of iron to ship building, and many improvements in type-founding, which has rendered the place famous for the masterly manner in which printing is performed. In connection with the latter, it is a little curious to note how Laplace declared it to be his opinion that the most lasting tribute ever raised by Britain to the memory of Sir Isaac Newton was the beautiful edition of the "Principia," prepared by the University printers of Glasgow.

The next port to treat of will be that of Hull.

THE SAN JUAN BOUNDARY LINE.

Setting aside the numerous articles and treatises professing to discuss this much-vexed question from various aspects, pacific and otherwise, the perusal of the ordinary official records which remain, augmented, as they are, by appendices, sketch-maps, and historical notes, would still constitute a considerable undertaking. We shall not, therefore, attempt any lengthy discussion of the points, material or immaterial, raised in the course of this protracted dispute. Nor shall we approach it in any spirit of criticism adverse to the award of the Emperor of Germany. To his decision we elected to refer the settlement of the question, and by that decision made absolutely final and conclusive, moreover, by the Treaty of Washington, we are contented to abide. We believe that he could not have decided in any way other than he has on the question as submitted to him. Nothing could be less consonant with the spirit and dignity of the English nation, than to cavil at a judgment given at our own invitation by an arbitrator in every way qualified, from his position as an exalted and unbiassed neutral, to arrive at a just and equitable conclusion. Our object, in the summary of the case which follows, is simply to preserve for reference by the readers of the *Nautical Magazine* some brief record of a matter which, whether it be regarded from a political or geographical point of view, could not well be wholly ignored in our pages.

We shall begin no further back than the Treaty of 1846. Under this, it will be remembered, the long dispute between this country and the United States was brought to an end by the definition of the so-called Oregon boundary between the respective possessions of either country to the west of the Rocky Mountains. Out of a clause in this treaty arose the San Juan Boundary question. This clause runs as follows:—"From the point of the forty-ninth parallel of north latitude, where the boundary laid down in existing treaties and conventions between Great Britain and the United States terminates, the line of boundary between the territories of Her Britannic Majesty and those of the United States shall be continued westward along the said forty-ninth parallel of north latitude *to the middle of the channel which separates the continent from Vancouver's Island and thence southerly, through the middle of the said channel, &c., of De Euca's Straits to the Pacific Ocean.* Provided, however, that the navigation of the whole of the said channel and straits south of the forty-ninth parallel of north latitude remains free and open to both parties."

These are the exact terms, and it will be observed that they define the boundary line as running through the middle of the channel which separates the continent from Vancouver's island. The interpretation of these

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We shall begin no further back than the Treaty of 1846. Under this, it will be remembered, the long dispute between this country and the United States was brought to an end by the definition of the so-called Oregon boundary between the respective possessions of either country to the west of the Rocky Mountains. Out of a clause in this treaty arose the San Juan Boundary question. This clause runs as follows:—"From the point of the forty-ninth parallel of north latitude, where the boundary laid down in existing treaties and conventions between Great Britain and the United States terminates, the line of boundary between the territories of Her Britannic Majesty and those of the United States shall be continued westward along the said forty-ninth parallel of north latitude *to the middle of the channel which separates the continent from Vancouver's Island and thence southerly, through the middle of the said channel, &c., of De Euca's Straits to the Pacific Ocean.* Provided, however, that the navigation of the whole of the said channel and straits south of the forty-ninth parallel of north latitude remains free and open to both parties."

These are the exact terms, and it will be observed that they define the boundary line as running through the middle of the channel which separates the continent from Vancouver's island. The interpretation of these

words was the point at issue. The channel then known—the only channel—was the Rosario Straits, which, as reference to our sketch map

will show, divide the archipelago of San Juan from the mainland. This being the case, there was no difficulty in determining "through the middle of which channel" the boundary line should go, and the arrangement added the group of islands, of which San Juan is the chief, to the dominions of Britain. But a second, and more northerly channel, the canal of Haro, was subsequently discovered, and then arose the question—important enough to one or other of the parties to the Treaty of 1846, through which channel—*i.e.*, that of Haro or Rosario—the boundary line should pass. If it passed to the north of the San Juan Archipelago, then the archipelago fell to the United States; if it passed to the southward, it remained part of the dominions of Great Britain. During

the war the island of San Juan was seized by the American forces, and the two countries have for some time held divided possession of it, the joint occupation being conducted in a most peaceable and harmonious manner.

By the treaty of Washington, however, provision was made, in addition to the settlement of the Alabama claims and other matters, for the definition by arbitration of the San Juan boundary line. The matter was accordingly submitted to the arbitration of the Emperor of Germany, and the Emperor of Germany has decided that the line of boundary shall run through the canal of Haro. The English forces, a detachment of marines, have accordingly been withdrawn from San Juan.

As premised, in our opening words, we abstain from criticism of the decision arrived at by His Imperial Majesty. The position of the archipelago to which San Juan belongs will be sufficiently explained by the accompanying sketch. The following description of the principal islands, &c., summarised from the "Vancouver Island Pilot," of Admiral Richards, may be of interest to our readers :—

San Juan is an island of considerable size, being 13 miles in length and about 4 miles in breadth. The western shores are steep and rocky, Mount Dallas rising to a height of 1,086 feet; but the eastern side falls in a more gentle slope, and affords a considerable extent of good land available for agricultural and grazing purposes. Towards the southern end is the farming establishment of the Hudson's Bay Company. The south-eastern extremity terminates in a white clay cliff, over which rises Mount Finlayson to a height of 550 feet. This mountain is remarkable as being bare of trees on the south side and thickly wooded on the north. Off the north-west end of San Juan lies Henry Island, being separated from it by the narrow channel called Mosquito passage.

Lopez, the southernmost of the islands, lies on the eastern side of Middle channel, and is nine miles long N. and S., and three miles E. and W. It is thickly wooded, much lower than the other islands of the Archipelago, and its southern side is indented with bays and creeks which do not, however, form good anchorages. On its western side is a creek terminating in an extensive lagoon, the former offering great facilities for beaching and repairing ships. On the north is Shoal Bay, which affords good anchorage, and on the east is the Sound of Lopez, having an entrance from Middle channel, and three distinct passages from Rosario Straits.

Orcas is the most extensive of the islands. It is mountainous, and, in most parts, thickly wooded, although in the valleys there is land partially clear of timber, and available for agricultural purposes. Its southern side is much indented by deep sounds, that known as East Sound almost dividing the island. On the eastern side of the Sound is

Mount Constitution, rising nearly 2,500 feet above the level of the sea. On the western is Turtleback, 1,600 feet high, and west of it again is a singular bare top cone, known as Orcas Nob. The ports are Deer Harbour, West and East Sounds, but on the western and northern sides there is no convenient anchorage. Laurence Point, the eastern extremity of Orcas Island, is steep on its northern side, and from it the coast turns abruptly southward, forming the western side of the Strait of Rosario.

The chief strait is Haro Strait, the westernmost of the three channels leading from the Strait of Fuca into the Strait of Georgia. It is for the most part a deep, navigable ship channel, but owing to reefs, scarcity of anchorages, and, above all, the strength and varying directions of the tides, requires careful navigation, and is far more adapted to steamers than to sailing ships. There are several smaller channels and passages branching from this strait.

Rosario is the most eastern, and one of the principal channels leading from the Strait of Fuca into that of Georgia. Like Haro Strait it has several smaller channels, which branch off to the eastward, the principal of which are Guemes, Bellingham, and Lummi. The greatest breadth of the strait is five miles; the narrowest, rather less than one and a-half miles. The tides are strong, and the principal dangers are the Bird and Belle Rocks, which lie almost in the centre of the strait. There are several anchorages, Davies Bay, on the eastern side of Lopez Island; Burrows Bay, on the west side of Fidalgo Island; Ships Bay, in Guemes Channel, and Strawberry Bay, in Cypress Island, are the chief.

Douglas Channel, leading into Haro Strait, between Orcas and Waldron Islands, is one and three-quarter miles in breadth, and both sides are free from danger.

DIPLOMATIC APPOINTMENTS.—The *Gazette* has the following:—Le Marchant Hadsley Gosselin, William Henry Doveton Haggard, Sir George Francis Bonham, Bart., Eugene James Lee-Hamilton, the Hon. William John George Napier, William Edward Goschen, and William Charles Philip Otho Aldenburg Bentinck, now attachés, to be Third Secretaries in Her Majesty's Diplomatic Service; Henry Howard, now a Third Secretary, to be a Second Secretary in the Diplomatic Service; Alexander William Moir, to be President of the Island of Saint Christopher; Alexander Augustus Melfort Campbell, to be President of the Island of Nevis; and Neale Porter, to be President of the Island of Montserrat.

SHORT YARNS FOR SAILORS.—No. 2.

Discipline and duty are hard words, because they frequently mean hard things, yet a man is not worth anything until he has been subjected to the one and has met the requirements of the other. The hardness of the processes must be regulated by the temperament of the patient; but this generation is not likely to err on the side of asceticism and severity; it inclines rather to the opposite extreme. For the generality of men a mattress is better than a feather bed to lie upon, and if they be thoroughly healthy and in good condition, and not too old, a deal board will do as well as either. In most of the organizations of society rule and discipline are necessary, but on board ship they are absolutely indispensable; without them all would go to ruin in no time. The reason why discipline is often so painful is, that those who are the human agents in administering it are sometimes extremely disagreeable, harsh, unsympathizing and proud. There are men (and women too) who, having been accustomed almost from their youth upwards to say to one come, and he cometh, and to another go, and he goeth, have become spoiled by the service and deference of others, have lost all natural modesty and humility, and have forgot the relative and reciprocal character of all service and duty. Some of us who have smarted from subordination to arrogant and assuming men have now and then broken out into impatience and anger; and among the working-classes especially there has risen of late a feeling of envy, jealousy, suspicion, and dislike towards those who employ them, and who, by virtue of their position, are apt to assume some superiority. Hence, too, a rather widespread desire amongst men to get out of the level which they for the time being occupy, to improve, not themselves, but their position, to climb up as it were to the "quarter-deck" of the world. A little reflection, however, ought to calm down this irritability and impatience—the charms of wealth and station are evanescent and fleeting; the visions of grandeur are dissolving views. A wise man will come to consider all stations as intrinsically pretty much alike whatever the fashionable distinctions between them, and will strive to make the one which he for the time occupies, whether conventionally high or low, a means of expressing the best of his character. The position of a common sailor before the mast is not commonly thought, in the estimate of Pride, to be a place of much honour and dignity, and yet when we consider the kind of service which he renders, the grandeur of the scenes through which he moves, the boundless heavens and mighty waters above and around him, the wondrous phenomena he has to watch, and the beautiful laws he has to obey, there is a positive sublimity in his position, and a sailor should mount the rigging of his ship with a feeling of

grandeur and dignity. But it sometimes happens that the captain and mate, and perhaps two or three young officers besides, have tempers and manners which render the discipline of the ship unnecessarily bitter, and the duty oppressive in the extreme. It is very sad when that is the case, but a good sailor has no alternative but to obey these men, and he must do it with exactness, with readiness, and without a protest or murmur. Unity of plan and action is of course all essential in the management of a ship at sea, and this would be quite unattainable if every man were allowed to use his judgment and discretion, even supposing him to be well endowed in that particular. A crew of Nestors and Solons, even if commanded by a very inferior man, would do better to obey him than to act from their own varying opinions and impulses. The foolish captain might lead the ship into danger by reason of his folly; but the wise crew would not save it by means of their wisdom, unless they subordinated their varying wills to that of one common head. But the truth is that ships are never commanded by utterly incompetent men. They are frequently far from wise and discreet, but they are not ignorant on the speciality belonging to their own profession. They have been trained and tested in that; and it is precisely because of their qualifications in that most essential particular that the crew is bound to obey them, both by maritime and moral law. There may be occasionally, perhaps, a little hard swearing from the quarter-deck, a little superfluity and coarseness of epithet, a little unkindness of manner and violence of action exhibited by captains, lieutenants, and mates, towards common sailors; but Jack, if he be a true man, will bear all this in silence and with a brave heart, for he knows that discipline must be maintained and duty must be done even though there be irritation and insult in the language of the directing mind. We remember, though it is now more than thirty years ago, having to make a voyage up the North Sea in a small sailing ship at the latter end of a cold and gloomy November. One bitter day, when off the coast of Norway, something got foul and out of gear at the extreme end of the bowsprit, and a sailor was ordered in exceedingly rough and peremptory tones to go and put it right. It was very cold; there was a sharp, cutting wind blowing, and the vessel was pitching heavily. The mariner instantly obeyed the order, though it was exceedingly dangerous to do so, on account of the slipperiness of the bowsprit, and the violent pitching motion of the ship. He reached the end of the boom, and while doing his work there, it happened four or five times that his entire body was dipped in and out of the cold sea, and his figure became undiscernible amidst the foam and spray. The work, however, was done, and the brave fellow got back again to the deck, looking serene and unconcerned as if there had been no particular hardship in the task, and nothing

ungracious in the order to accomplish it. Neither did his comrades e xpress any anxiety or surprise. It seemed as if discipline and duty had made such things familiar to them. Captains and mates are not now-a-days, as a rule, violent or ill-natured men. Curt, bluff, off-hand, and decisive they are and ought to be; but the cases are very rare in which we hear of any positive inhumanity. It was far otherwise many years ago. To be a martinet was then one of the qualifications for being a master, and such men as Bligh of the *Bounty* were officially regarded as made of the right stuff for command in the Royal Navy.

At the present time we think that men invested with authority do not in general overstrain that authority. There may be now and then swagger, pride, coldness, and supercilious airs, but there is no practical injustice, no tyranny. Looking at some very recent phenomena of the industrial world, the disposition to dictatorial and unreasonable conduct appears to us, we are sorry to say, to have been exhibited among the employed rather than among the employers—among those who profess to serve rather than among those who direct and command. Almost all the labouring classes, latterly, have been more ready to "strike" than to hear. But good will ultimately come of all this commotion. It will be discovered that there are faults in the so-called high places and faults in the so-called low, and that it is by amendment on both sides that harmony is to be attained. Meanwhile, wise providential laws are secretly and quietly working for the benefit of all. Valleys are gradually rising that ought to rise, and mountains are gradually sinking that ought to sink; and common sailors and common working men of all kinds may rest assured that they are promoting their own personal interest, together with that of the whole community, by calmly and efficiently doing their duty, whatever it may be, and by quietly accepting discipline as a necessary means to a right end. Every true observer of life knows well how surely, though slowly, real dignity of character will upraise and make itself felt, while mere pride, vanity, and conceit will come sooner or later to a fall.

But, see! in the midst of our yarn a poor fellow, by some accident or other, has fallen overboard. The captain orders out the boats, without the loss of a moment of time, and the order is obeyed instantly, in all the symmetry of order and discipline by the noble crew. How eager and anxious they look; how strong and firm they row! There! they have caught hold of the poor fellow at last, and now they are bringing him back to the ship, every man of them delighted to have promptly obeyed a generous order with a generous will.

E. A.

NAVAL TACTICS.

From late discussions on naval tactics at the United Service Institution and at the Junior Naval Professional Association, it would seem that professional opinion is very much divided as to the best and most effective plan for attacking an enemy's fleet at sea. The "wedge" formation for attack appears to be most in favour at the United Service Institution, but to judge from the discussion that took place at the Naval Professional Association on the 11th inst., we have no recognised system or rules to guide our naval captains in ramming or torpedoing an enemy. On the evening in question, Staff-Commander Going read a paper advocating ramming an enemy, as the most effective mode of attack. The chairman (Lieut. Grenfell) declared himself an opponent of ramming, if it were adopted at the expense of other modes of attack; because it was based on no experience, whilst guns had performed valuable services, and because a man must nerve himself to an almost super-human extent to be prepared for sending down a ship with all her crew in a few seconds." Commander Stuart agreed with the chairman, considering that "ramming would be one of the most difficult things in the world." Commander McHardy, following, on the same side, "Hoped that it would be shown that the gun was the first arm for the British Navy, if it were only for the sake of the *Excellent!*

Staff-Commander Going's opinions and arguments in favour of ramming were more or less supported by the naval engineer officers who spoke, as well as by Lieut. McIllwaine, R.M., and by Professor Main.

This discussion is worthy of note, because it involves a serious question relating to the efficiency of our Navy, touched on at page 91 in the February number of the *Nautical Magazine* of this year, which question may be thus rendered: "In the naval battles of the future, when fleets are engaged in close action, circling about at full speed, will the captains and navigating officers of our ships agree on speculative points of conduct, involving perhaps the destruction of their own ships or that of near enemies, in time to save one or destroy the other? We have high authority for expecting wisdom from a multitude of councillors, *when there is time for consultation*, but perhaps most *practical* men will agree in thinking that the homely proverb which condemns the practice of having "too many cooks" is better adapted to the above circumstances, and there is a strong nautical utilitarian flavour about it.

Moreover, the arguments brought forward at the Naval Professional Association against ramming would necessarily condemn the use of torpedoes, and it is curious that foreigners generally agree in believing that the ram and the torpedo will play *the most* conspicuous parts in future naval

actions. Perhaps all the most practical of our navigating officers, would be of the same opinion, were the question to be put to them, whilst the executives would naturally favour the guns, as being the arm with which they have the best practical acquaintance.

Again, it has been stated, at the United Service Institution, that eight knots will probably be the best speed for our ships when about to attack an enemy's fleet; and this rate is very good for easy manœuvring and rendering the ships steady platforms for their guns; but it may be worth while considering also, what we are to do if our foes, equally confident of success with ourselves, advance to meet us with the ram and the torpedo at full speed, or 13 knots an hour, as they propose to do? In any case it must be evident that steam ships when engaged in close action should be commanded and manœuvred by one and the same absolute authority, and the individual thus responsible need not be so much a first-rate gunnery officer as a thorough master of the capabilities of his ship under all circumstances likely to occur.

Now, bearing in mind the wide differences of opinion prevailing in our naval service about the most efficient method of handling the new engines of naval warfare, supplied to us by science, it is worth while noting the unanimity of foreigners on certain important points relating thereto. For instance, in an able article appearing in the *Russian Revue Colonial et Maritime*, for April, 1873, on the specialisation of ships of war, it is stated that the *collective* capacity (and consequent importance) of fleets on the high seas has declined, and the *individual* importance of ships increased; that ramming will play the most conspicuous part in future naval actions; that it will be impossible for an admiral to control the movements of all the ships under his command during a naval engagement, and that different classes of vessels will require different rules for efficient service under fire.

Full rigged iron-clads are condemned, because they must necessarily succumb to iron-clads not encumbered with masts.

Finally, special types of vessels are required for particular service; and it is very sensibly argued therefrom that coast defence is easy and attack by sea-going fleets impossible. As there is no division of responsibility in the Russian Navy for performance of executive and navigating duties, the questions discussed—in the paper quoted—are handled in an impartial, as well as an able manner; and as it is therefore evident we have nothing to lose by publicity, it is to be hoped that all our officers will contribute to the general store whatever *practical* knowledge they may possess on this interesting subject, which a desire to further has called forth the following paper:—

Sailing fleets were usually formed in close continuous lines or columns for battle, because such formations were the most simple, and effective to

secure the orderly concentrated action of the whole force at any required point, either in attack or defence. When ships were entirely dependent on the wind for motive power, any loose extended order of battle, or the breaking up a fleet into squadrons, might have been disastrous; the light weight and short range of the artillery then in use rendered close action necessary to produce decisive results, and with a failure of the wind in time of action, or a sudden change in its direction, victory would probably remain with the best concentrated fleet. But iron-clad steam ships, armed with powerful long-range artillery, require as entirely a new system of naval tactics for their development as has been found necessary in the army to meet the new conditions of warfare on shore.

The objections to the old lines or columns for formation of modern fleets would be their necessary extent and consequent weakness, which, united to the difficulty of seeing and transmitting signals through a cloud of steam and smoke, would render smart manœuvring a large force an impossibility. If the single line or column be exchanged for a denser formation, of two or more lines or columns, the evil is only thereby increased, and the individual action of each ship in manœuvring crippled. In short, any efficient direction of a fleet under the old tactical system is impossible. Modern ships of war require plenty of space and freedom of action to develop their powers, and a fleet in close order engaging an enemy in open order would probably be destroyed by rams.

Very likely all this was present to the mind of the writer in the Russian review quoted above, and we may therefore agree with him in the opinion that the collective capacity of fleets (*under the old system of tactics*) has declined.

But, inasmuch as we cannot do without a fleet, the question to be considered is, what is the best formation for battle so as to preserve its collective capacity as much as possible, without sacrificing the individual importance of each ship? The subjoined sketch is intended to illustrate a plan by which it is thought this may be done.

Fig. A represents a squadron of five large iron-clad ships and two small torpedo and dispatch vessels (it is assumed that the iron-clads are all efficient as rams), commanded by an Admiral or other senior officer whose station will always be in the centre of his command, No. 1.

The squadron is supposed to be sailing in open order of battle, half a mile apart.

It will be observed that each ship has a perfectly clear space for manœuvring in every direction from which she would have to operate, although at the same time immediately under the direction and support of the Admiral and the remainder of the squadron. It is intended that the Admiral or senior officer's ship shall always be No. 1, but in manœuvring the others shall shift their numbers according to their

FIG. A.
The Squadron.

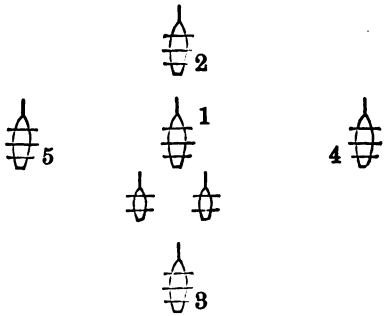


FIG B.

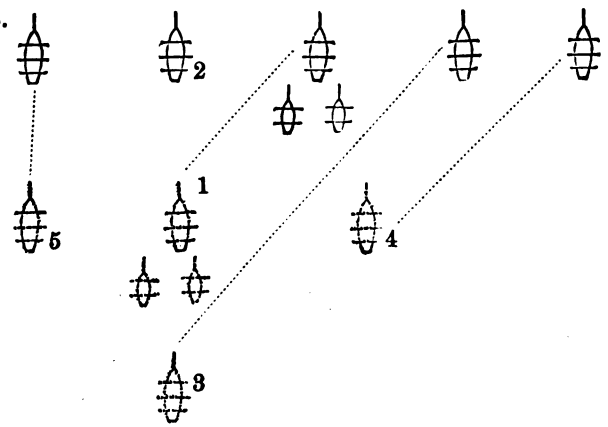


FIG C.

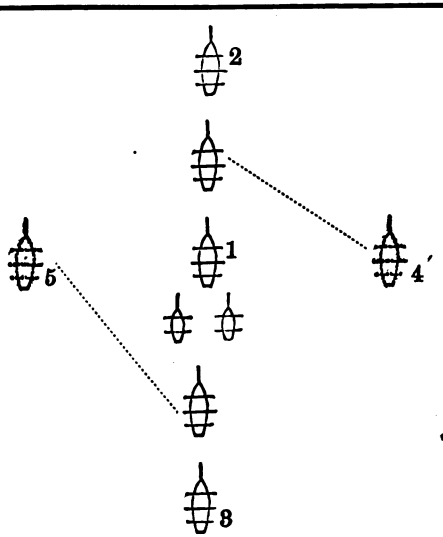
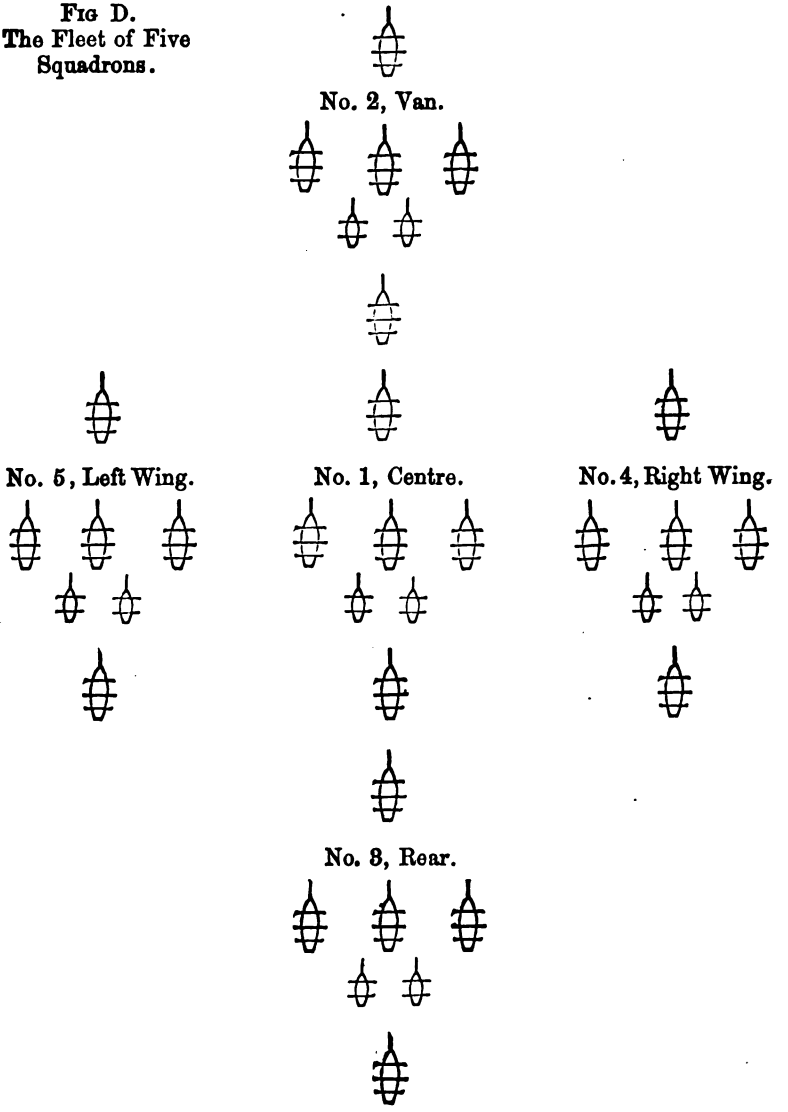


FIG D.
The Fleet of Five Squadrons.



position in the order of sailing; thus, No. 2 will always be ahead of the Admiral and 3 astern of him; No. 4 on his starboard, and 5 on his port beam. In changing front to starboard, No. 4 becomes 2; 5, 3; 3, 4; and 2, 5, &c., &c.

The changes to line or column should always be made in the same

order as in Fig. B. To form line in front, the Admiral would have Nos. 3 and 4 on his starboard beam, and Nos. 2 and 5 on his port beam. The same order of sailing would be observed in forming the centre and rear lines.

Fig. C. To form column, No. 4 falls in between the Admiral and No. 2, and No. 5 between him and No. 3.

The torpedo and despatch vessels will, when not scouting, be stationed one on either quarter of the Admiral's ship.

It is thought a squadron of five ships thus arranged could be more easily handled than in any other form, and that taking the squadron thus arranged as the unit of a large fleet, the same order of sailing, and for battle (see Fig. D) would secure the greatest unity of action and most efficient control.

J. R.

Bristol, 21st April, 1873.

FREEBOARD AND STABILITY.

THE question of the freeboard of merchant ships is at once one of the most important and one of the most complex subjects connected with naval architecture. It is only just to those who have to encounter the dangers of the sea that the vessel in which they sail shall not be loaded beyond the limit of safety; and, on the other hand, the gain of the owner upon his investment may depend upon that limit being reached. It has recently been pointed out that this being the case, shipowners are under great temptation to exceed what they believe to be a safe depth of immersion for their ships, seeing that all the extra freight thus earned is clear profit; does not this consideration also furnish a strong reason for dealing cautiously and advisedly with the subject, and, above all things, ascertaining for certain what is the safe limit, before proceeding to prohibition or punishment. It is not, however, our intention in this article to discuss the propriety of Government interference with the loading of ships, but to attempt to deal with one important part of the scientific question of the use of freeboard in connection with the safety of ships at sea. The amount of the freeboard of a vessel might be considered as determining her spare buoyancy, and also as limiting the load, and consequently the strains directly attributable to the load. Spare buoyancy is a most important element of safety, whether considered as affording opportunity for repairing damage, or for the escape of the crew, when all is over with the ship. If freeboard were regulated only with regard to this element, it would entirely depend upon the kind of cargo, and would be proportional to the volume of the ship. Where a cargo of less

specific gravity than water was carried, no spare buoyancy would be required, and a *maximum* would be needed in the case of heavy cargoes, where there is necessarily much empty space, capable of being rapidly filled by water in the event of a leak. A very wide subject would be opened up by the consideration of what safe load a ship can carry in relation to the strength of her structure merely. Obviously, this would be regulated by the original quality, quantity, and arrangement of the material of which she was composed, the extent to which it might be expected to have deteriorated, and also by the character of the cargo itself, whether it was of such a nature that its weight would be equally distributed over all parts of the structure, or of such a character that the most careful stowage would not secure a fair adjustment of the strain. We have mentioned the importance of the elements, both of spare buoyancy and strain of load entering into any complete treatment of the question of freeboard; it is not our intention, at least in this article, to attempt any such complete consideration of the question, but merely to place before the reader an account of the bearing of freeboard upon the stability of ships and their behaviour at sea, so far as such behaviour is connected with their stability. The investigation must, of necessity, lead us some way into the theory of naval architecture, of which, however, we shall say no more than can be described in plain language, and put within the reach of all who have an elementary knowledge of mechanics.

We cannot explain the use of freeboard in connection with a ship's stability without going at some length into the whole question of stability. There is, probably, no department of science of which so many false notions are current, and none in which the terms employed have been so often misunderstood and misapplied. The terms *stability* and *steadiness* are popularly looked upon as synonymous, although they really have, in connection with this subject, widely different meanings, so diverse, indeed, that the presence of one in excess implies a want of the other. The word *metacentre*, too, has proved a stumbling block to most unscientific writers. One has recently spoken of it as the "centre of displacement," and it is a very common error to suppose that it is the point about which the ship rolls. So far is this from being the case, that a ship really does not roll about any fixed axis whatever, it is only in scientific language that she can be said to roll about an axis at all, the axis being an instantaneous one, that is, one which is constantly changing. In writing about this subject, we think it will be best to begin at the very beginning, and from first principles to open up as much as can be made intelligible to the general reader. Much of it, fortunately that of lesser importance, can only be understood by those who have a considerable knowledge of mathematics, and some of the problems con-

nected with naval architecture are of such extreme complexity, that, in the words of one of the most eminent writers on the subject, their solution is "beyond the powers of existing mathematical machinery."

The first principle which we have to state is, that floating bodies at rest displace their own weight of the fluid in which they float. This may be easily proved by experiment. Lower gently a piece of wood, say a model of a ship, into a vessel brim full of water, and standing in a larger vessel, so that all the water which runs over may be caught. Now, weigh the water which has run over, and it will be seen to be exactly the weight of the model. Suppose the water were measured and found to be exactly a gallon of fresh water, we should then know that the model was ten pounds weight, since a gallon of fresh water weighs ten pounds. A rule the same in principle, though applied somewhat differently, enables us to find the weight of a large ship, as certainly as we thus find the weight of the model. We do this by first ascertaining its *displacement*, that is, the weight of water it displaces. Having noted the position of the water line, a plane is supposed to pass through it, and the cubic content of the part of the ship below this plane being ascertained in cubic feet, is divided by thirty-five, the quotient being the number of tons displacement, since a ton of salt water occupies about thirty-five cubic feet of space. When the imaginary plane is drawn at the water mark, when the ship is laden, the result obtained is called the *load displacement;* when it passes through the water mark when the ship is empty, it is called the *light displacement.* The former is the weight of the ship and cargo, the latter of the ship alone, the difference between them being the weight of the cargo. Some shipowners have the displacement of their ships calculated to various draughts of water, and either a table or a scale of displacement prepared, by which they can tell at once how much weight their ship has on board by merely observing her draught of water. Suppose now, the volume cut off by the imaginary plane passing through the load water line to be a homogeneous solid, that is, a solid body of the same weight and density throughout, its centre of gravity, calculated on this supposition, would give us the position of what is called the centre of gravity of displacement or the *centre of buoyancy.* It has this latter name because the upward buoyant pressure of the water upon the ship produces the same effect in bearing her up as if it all acted upon and through this point; for scientific purposes it is always conceived so to act. It is not our purpose to go so much into technical details as to explain how the volume of the displacement and the position of the centre of buoyancy are found by measurements and calculations; suffice it to say, that both can be ascertained with great accuracy. By way of illustration we may suppose a cube of wood

measuring a foot each way, and of such specific gravity as to float one third out of fresh water. Its immersed volume would be 1ft. × 1ft. × ¾ft. = ¾ cubic foot, and since a cubic foot of fresh water weighs a thousand ounces, its displacement would be seven hundred and fifty ounces. Its centre of buoyancy (as it is the same form above and below) would be at half the depth of the immersed portion, that is, at four-and-a-half inches below the water line. The *centre of gravity* of the cube, however, would be at its centre, that is, at three inches below the water line. The difference is thus seen between the centre of buoyancy of a ship and her centre of gravity, which is the next important point of which we have to speak. When the centre of gravity of a ship is spoken of, what is meant is the centre of gravity of the hull, equipment, and cargo all taken together. We do not think it necessary here to occupy space by describing the meaning of the term *centre of gravity*; it may be found in any elementary work on mechanics; enough for our present purpose to say that for all the questions which we shall here consider, the weight of the ship may be conceived to be concentrated at her centre of gravity. We have said that the buoyancy of the water may be considered as acting upwards through the centre of buoyancy; consequently, when the ship is at rest her centre of gravity must be in the same vertical line with her centre of buoyancy, since the sustaining force acting upwards through the latter, balances the weight acting downwards through the former.

We have now to describe the third important point—the *metacentre*. It is perhaps unfortunate that is impossible to define the metacentre in a few plain words. Before attempting a definition of it, we would refer the reader to the figures, one of which represents a transverse section of a ship upright at rest, the other the same ship inclined to an angle. G (Fig. 1) is the ship's centre of gravity; B her centre of buoyancy. When the ship is heeled over (Fig. 2), it is obvious that some portion

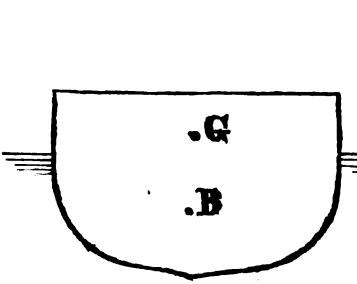


Fig. 1.

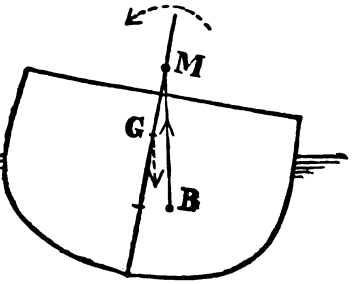


Fig. 2.

which was formerly under, is now above water, and *vice versâ*, and con-

sequently the point, which was the centre of buoyancy, is so no longer. Call the new centre of buoyancy B^1, the buoyant force of the water acts upward through it in the vertical line drawn through B^1, while the weight of the ship presses downwards in a vertical line through G. The weight and buoyancy, it thus appears, no longer balance each other. If we notice the arrows indicating the directions of these forces, we shall see that they tend to roll the ship round in the direction indicated by the arrow above the figure, that is, to bring her again to the upright position. The force thus called into action is called the righting force or stability of the ship. If the vertical line through B^1 passed through G, the gravity and the buoyancy would meet and balance each other as they did when the ship was upright; in that case she would have no stability at all; when she was heeled over there would be no force to bring her back. This is actually the case with a circular spar of uniform density, which may be rolled over and over in water as much as we please, but always remains as it is left, having no tendency to return to its first position. In the case of merchant ships whose cargoes are badly stowed, so that as the ship rolls the cargo shifts, stability or righting force is largely diminished, because when the centre of buoyancy moves towards the immersed side the cargo shifts, and thus the centre of gravity is brought nearly to the same vertical line with the new centre of buoyancy, and consequently the weight and the buoyancy nearly meet and balance each other as they did when the ship was upright. There is thus no tendency to return to the upright, and the ship rolls, as it were, lifelessly about at the mercy of the waves. Water-logged ships afford another illustration of the same state of things, that is, the centre of gravity following the centre of buoyancy, and a consequent loss of righting force, only in this case the evil is aggravated, the water moves so freely as to acquire a *momentum*, and thus the ship is even held back when the waves have a tendency to restore her to the upright.

If the vertical line through B^1 were to pass through the middle line of the ship below G, it will be seen that the weight acting through G and the buoyancy through B^1 would have a tendency to turn the ship still farther over, and ultimately to capsize her. The peculiar feature of a ship in which this last state of things exists is, that while undisturbed she remains upright, but if heeled over in the slightest degree she has a tendency to go farther. The point M, where the vertical line through B^1 meets the middle line of the ship, if her angle of inclination is small, is called the *metacentre*, or measuring centre. Its height above the centre of gravity is the usual practical measure of a ship's stability, and is a sufficiently accurate measure of it in ships of the ordinary form, but with a limitation to be afterwards mentioned. It is not our intention to demonstrate this mathematically here, but what we have already said

measuring a foot each way, and of such specific gravity as to float one third out of fresh water. Its immersed volume would be 1ft. × 1ft. × ¾ft. = ¾ cubic foot, and since a cubic foot of fresh water weighs a thousand ounces, its displacement would be seven hundred and fifty ounces. Its centre of buoyancy (as it is the same form above and below) would be at half the depth of the immersed portion, that is, at four-and-a-half inches below the water line. The *centre of gravity* of the cube, however, would be at its centre, that is, at three inches below the water line. The difference is thus seen between the centre of buoyancy of a ship and her centre of gravity, which is the next important point of which we have to speak. When the centre of gravity of a ship is spoken of, what is meant is the centre of gravity of the hull, equipment, and cargo all taken together. We do not think it necessary here to occupy space by describing the meaning of the term *centre of gravity;* it may be found in any elementary work on mechanics; enough for our present purpose to say that for all the questions which we shall here consider, the weight of the ship may be conceived to be concentrated at her centre of gravity. We have said that the buoyancy of the water may be considered as acting upwards through the centre of buoyancy; consequently, when the ship is at rest her centre of gravity must be in the same vertical line with her centre of buoyancy, since the sustaining force acting upwards through the latter, balances the weight acting downwards through the former.

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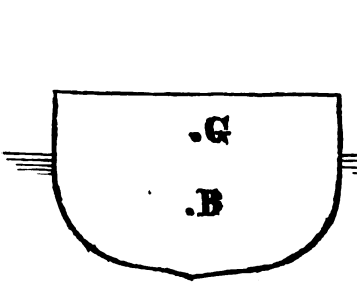

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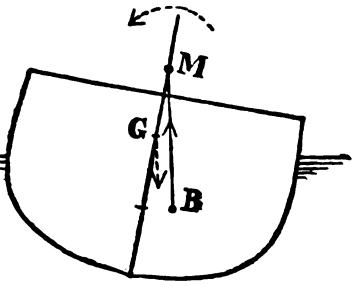

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about stability goes some way towards proving it. In the first case we mentioned, that which is shown in the figure, where the ship has righting force when inclined, it will be noticed that M is above G. In the second case, where the ship remains just as she is heeled over, M is at the same point with G, and in the third case, where she has a tendency to capsize, M would be below G.

We have said that the point M is the intersection of the vertical through B^1 with the middle line of the ship; it is thus independent of the position of G, and, in fact, depends upon the location of the original centre of buoyancy B, and upon some features of the form of the ship. The metacentric height, which is the measure of stability, is therefore increased either by the centre of gravity being lowered, or by the metacentre being raised. In a merchant ship the position of the former is to a large extent regulated by the stowage of the load; the latter varies with the position of the water line, and, after a partial load is in, is rapidly lowered as the ship is more deeply immersed, in other words, as she has less freeboard. The metacentre is high in ships of large beam and small displacement, low in ships of small beam and large displacement. It is well known that in ships of the former class the chief weights may be stowed high, in the latter the centre of gravity should be low. It remains to be observed that while a small amount of righting force, otherwise spoken of as small metacentric height, is a dangerous condition, as has been shown by well-known instances of ships capsizing, either when cargo was stowed too high, or when they have had insufficient ballast; the other extreme is equally dangerous. When a ship has too much righting power, indicated by a large metacentric height, she labours heavily at sea, springs back forcibly from a roll, and so immerses herself deeply on the other side, and thus great, and often destructive, strains are brought upon her whole framework, and masts are often carried away. It is for this reason that it is found necessary to fit ships which are intended for heavy cargoes, such as copper ore, with a flat, in order to raise the centre of gravity of the load.

It has for years been the rule to calculate the metacentric height and the position of the centre of gravity for every ship in the Royal Navy; of late the centre of gravity has also been found by heeling over the ship, as a check to the calculation. This is done when the ship is ready for sea, and immersed to her load line, by observing what angle a given weight, moved a given distance, athwartships, inclines the ship. We cannot, in a paper of this character, go into detail on this point; neither can we give the rule for finding the metacentric height. It has been found by experience that a metacentric height, of from three to four feet, is accompanied by good behaviour at sea, in the case of ironclads. In merchant ships the problem is somewhat complicated by the varying

character of the cargo, but the centre of gravity of the ship, at the light water line, might be obtained by a simple and easy method, once for all, and then rules could be laid down for stowage of cargo on all future occasions, so as to ensure the centre of gravity of the whole being in a safe and proper position. This, or something like it, will, doubtless, be done when shipowners and others interested in ships, set a higher value upon that scientific knowledge which is now so much underrated and neglected, we might almost say, despised. It has been found in the Royal Navy, that a difference of two feet in metacentric height is enough to cause a very wide difference in the seaworthiness of two ships, the one rolling easily and moderately, the other heavily and almost dangerously. There is, without doubt, often more difference than that between the metacentric heights of the same merchant ship at the same load line, on two succeeding voyages, owing to different stowage of cargo. A merchant ship makes, we will say, one voyage, and is considered a good sea boat; she is again loaded, and no one connected with her is able to predict, in the present state of knowledge on such affairs, whether she will be better or worse, with the cargo stowed higher or lower, and thus a hazardous, and often disastrous, experiment is tried for want of scientific knowledge. We are not, and most likely never shall be, in a position to estimate the proportion of losses at sea which are caused by bad stowage; it is, without doubt, considerable, and when we remember how comparatively small a difference in the disposition of the cargo will affect the behaviour of the ship at sea, we are inclined to think that as many losses may be put down to this cause as to overloading. We must not be understood now to refer to loose, imperfect stowage, although that is, undoubtedly, the cause of great evil, but to improper disposition of the weight. This can only be remedied by the more general diffusion and appreciation of scientific knowledge; ignorance and carelessness, not greed, are the chief causes of mischief in this case; and whatever may be done by Government to restrict overloading, it appears certain that nothing so vexatious and impracticable will ever be attempted, as an interference with the stowage of ships would be.

We now come to the direct bearing of stability upon freeboard, or rather of freeboard upon stability. We have spoken of the metacentric height as a practically correct measure of the righting force, or stability, in ships of the usual form. It is, however, only correct as a measure of stability when the ship is not inclined to so large an angle as to bring the edge of her deck under the water. When the deck begins to be immersed, the righting force which up to that time may have continued increasing as the ship was heeled over, soon ceases to increase, begins to decrease, and then in some cases actually vanishes, and it is thus the

case that ships which have a good metacentric height, and consequently enough stability at moderate angles of inclination, are so crank as to capsize when a part of the deck is brought under water. This was the cause of the unfortunate loss of the *Captain*, and it has been doubtless the cause of the losses of many merchant ships which are reported as "missing." The case stands thus: If a shipowner wishes to load his vessel very deeply, and then send her to sea, he may either stow the cargo with its centre of gravity so low that at any probable angle of heel the ship will have enough stability to right herself; or he may stow it so high that, in all but the worst weather, she will roll easily. If the ship encounters bad weather, in the former case she will, in consequence of her excessive stability, and consequent want of steadiness, have to endure great strains upon her structure, and may break and leak; in the latter case, through her having low freeboard, her stability will vanish at great inclinations, and she will capsize. It thus appears that if a vessel be exceptionally strong she may be made safe with less freeboard than she would require if only of the usual strength. Steamers also require less freeboard for purposes of reserve stability—that is, stability at great angles—than sailing ships. This was forcibly illustrated in the case of the *Captain*. When steaming, she had a sufficient reserve of stability to right herself, even in the heaviest seas. When, however, she was under sail, she was permanently inclined to such an angle as would bring the edge of the deck very near the water, and then the roll, in addition to this, inclined her so much as to cause her to capsize. So far, then, as the question of stability is concerned, steamers require less freeboard than sailing ships, strong ships less than weak ones, and it is even possible to have a prescribed freeboard according to rule, and yet such conditions of stowage that the ship would be safer if immersed deeper.

It is the consideration of reserve stability that renders it desirable that a *minimum* of freeboard should for each ship be fixed in relation to the beam. The Council of the Institution of Naval Architects recommended some few years ago, that in seagoing ships the freeboard should never be less than one-eighth of the beam, thus providing that it should be always necessary for the ship to have heeled over a certain angle (about 7°) before her deck touched the water. This recommendation is based upon the assumption that the cargo is properly stowed so that there is a fair metacentric height; under such circumstances, a narrow ship will require (only considering this part of the question) as this rule indicates, less freeboard than a wide one, to ensure the same reserve of stability. This appears somewhat contrary to the usual idea that deep ships are more likely to be unstable than shallow ones, but the explanation of the apparent incongruity is this. Deep and narrow ships are very much dependent upon good stowage for their stability, they require con-

siderable ballast when empty, and their centre of gravity is very much affected by the disposition of the load in them; but, provided they have a proper metacentric height when upright, their stability does not decrease so rapidly when the deck is immersed, as does that of broad ships.

Without proper stowage, a regulated freeboard would go a very small way towards ensuring a safe amount of stability. It would be of little service to make sure of a ship having enough righting force at large angles of inclination, if she had not the proper quantity at small angles. In conclusion, we would again say that the whole question of a ship's safety at sea is a most complicated one; that her design, strength, stowage, and freeboard are all important elements, and that to consider one separately and without reference to the others is not the way to arrive at any definite or trustworthy result.

SAFETY-VALVE COMPETITION.

THE design of the prize valve published in our May number, page 389, has called forth the following letter :—

"47, Granby Row, Manchester, May 1st, 1873.

"Sir,—Having seen the arrangement of Spring Safety-Valve to which you have awarded the £100 prize, I take the earliest opportunity of informing you that it will be my duty to put a Chancery injunction upon it.

"Yours, &c.

"THOMAS ADAMS."

The following challenges have been received :—(1.) "*Excelsior*" is prepared to supply his valve and to put it in competition with any other. (2.) "*Mulciber a*" and "*Mulciber b*" also challenges the selected valve to practical test. (4.) "*Primus*" withdraws, and asks for return of his drawings. (5.) Mr. *Thos. Turton*, whose drawings were sent in, is prepared to supply a valve and put it to practical test. (6.) "*Molecular Vortex*" challenges, and is prepared, to try his valve against competitors, and to find the boiler to try it on. (7.) "*Safe, Sure, and Simple*," asks the pressure at which we are to try the competing valves; his is ready for competition.

The time within which challenges must be sent in is 30th June. The provisional decision in favour of "*Virgo*" is dated 31st March. By the end of June, the Editor hopes to have arranged with the judges as to the exact terms and conditions of the actual trials, and the dates and places on and at which the trials will be made.

MR. PLIMSOLL'S SECOND BOOK.

We have refrained from commenting upon the extraordinary misstatements in Mr. Plimsoll's Book, pending the legal proceedings which have been taken respecting it. The first book, however, has now been supplemented by another, and it may fairly be said to be the most wonderful production of the year. It is wonderful, not because of the information it gives, but from the fact that any ordinarily sane man could be found to waste his money in printing it. The book contains 162 pages of reports of the draught of water of ships that have left certain places in the United Kingdom since 8th May, 1872. These reports are made to the Board of Trade, and are sent by that Board daily to Lloyds for publication, and these are the reports that Mr. Plimsoll states the Board of Trade officials would not furnish to him: but the truth is that they are open to anybody, at any time, and as was stated by Mr. Fortescue, in the House of Commons, he never asked that Board's officers for them. As a specimen of the 162 pages of the new book, we give the following three lines out of 8,000, or thereabouts, of which the Book consists:—

(1.) "Sailed from Shields, 10th July, *Moneta*, of Whitstable, 158 tons register, 'no marks visible.'"

(2.) "Sailed from Shields, 12th July, *Tom Duff*, of Aberdeen, 110 tons register, 'no marks visible,' 'deep.'"

(3.) "Sailed from Cardiff, 13th July, *Cornwall*, s.s., of Cardiff, draught forward 16 ft. 6 in., aft 17 ft."

The book is filled entirely by copies of reports such as these. To read one is to read all. The only novelty in the book is the wonderful conclusions Mr. Plimsoll draws from these records in his preface. "What terms," he asks, "are adequate to describe the conduct of officials who can, day by day, not only receive, but retail, in manuscript, reports of such a dreadful state of things, and yet raise not a finger to stop or even check *such wholesale manslaughter?*"

We are far from thinking the Board of Trade immaculate. Cases occur in which a little less regard for technicalities would result in advantage to the public service, but we can hardly blame officials for anxiety to keep on the safe side, and avoid the pitfalls on the path of the over-zealous. Mr. Plimsoll's error all through this business is accrediting the Board of Trade with powers they do not possess. Mr. Plimsoll ought to know, as every one else does know, that the Board of Trade have no power, whatever, to prevent an overloaded ship from going to sea: Mr. Plimsoll ought to know, as every one else knows, that if the Board of Trade are to have that power, it must be conferred

on them by Parliament. It follows, therefore, that if anyone is to blame in this matter, it is, in the first instance, every member of Parliament who has known of the mischief that has been going on, and having known it, has not given the Board of Trade the necessary powers to mend it. Who of these members of Parliament stands before Mr. Plimsoll in his knowledge of the mischief, and who, therefore, is more to blame than Mr. Plimsoll?

It may very fairly be charged against the Board of Trade that it has not been sufficiently importunate in demanding such powers from Parliament; but we know with what jealousy the House of Commons regards any application by a Government department for powers which that department may use oppressively. Still the fact remains that whatever may be our opinion of the Board of Trade's action, generally, it has not the power Mr. Plimsoll wishes the public to believe it has, and every one must see that to charge the Board of Trade with manslaughter because they do not do something they have no power to do, is mere clap-trap.

But, further, in what way are the returns, as Mr. Plimsoll says they are evidence of *wholesale manslaughter?* So far as is known, every ship marked "deep," or "very deep" has made the journey in safety, and other similar journeys since and before. Where is the manslaughter? Again, Mr. Plimsoll has evidently, in his absence of accurate information on the subjects of ships and seamen, come to the conclusion that the words "no marks visible," "deep," and "very deep," are synonyms for "marks immersed," "dangerous," and "very dangerous." The truth is, that not one ship in ten is marked at all, or, if marked, the marks are not distinct. "No marks visible" therefore by no means admits of the construction put on it by Mr. Plimsoll that the marks were immersed. Every one connected with ships knows that there are three common terms applicable to laden vessels—viz., "*deep*," "*very deep*," and "*too deep*." In the 162 pages of 8,000 reports published by Mr. Plimsoll in his second book, we have not been able to discover the words "too deep" against any ship, and only 34 out of the 8,000 are reported as having the marks submerged. If, as is the case, no ship has been reported as "too deep," where has been the necessity for interference? where is the wholesale manslaughter? and seeing that the "deep" and "very deep" ships have made their voyages in safety over and over again, why should ships be interfered with under such circumstances, even if the Board of Trade had the power to interfere. If Mr. Plimsoll had studied these returns impartially he might have ascertained their meaning. On page 80 there is a note on the steam ship *Irwell*, from Hull to Dantzig, which, one would think, ought to have opened Mr. Plimsoll's eyes as to the meaning of these memoranda, and the value to

be attached to "deep" and "very deep." The note says, "Fair trim aft. Rudder post is under water when fairly laden; draft cannot therefore be seen." It is so in many cases. When fairly laden, many a ship looks dangerously low, and yet is safer than if she had nothing in her. If Mr. Plimsoll does not know why, he had better ask the master of a sailing barge. He can board them in the River Thames on their way from the east coast, and the information he would gain would be very serviceable to him. It would correct many of the strange misapprehensions which now vex him, and would perhaps assist him to get rid of the notion, as our contemporary the *Spectator* advises him, that the Board of Trade is anxious to get as many ships lost, and as many seamen drowned, as possible.

We cannot close this article without expressing our regret that Mr. Plimsoll has made so many misstatements, and has been advised to propose remedies which must be characterised as absurd. There is great danger of a reaction, and of the Board of Trade escaping from the responsibility of proposing really remedial measures for the present state of things. Our trust, however, is in the Royal Commission.

MR. PLIMSOLL'S BILL AND THE UNCO GUID.—At the annual meeting of the Baptist Union of Great Britain and Ireland, held yesterday, in Walworth Road Chapel, it was resolved, on the motion of the Rev. H. Crassweller, B.A., seconded by the Rev. R. W. Wallace, "That this Union expresses its great sympathy with Mr. Plimsoll, M.P., in his arduous, self-denying and humane efforts to promote the safety of our seamen, and that it strongly urges on the churches throughout the country at once to petition Parliament to pass Mr. Plimsoll's Bill, *and to enact that no vessel, overloaded or undermanned, and no vessel needing repair, be henceforth allowed to put to sea.*" An influential deputation was also appointed to wait on Mr. Gladstone in support of Mr. Plimsoll's measure. Can absurdity go to a further height than this. If "*little Bethel*" would look after the "spiritual and social" condition of the seamen, and of the Mollys of Wapping Old Stairs, and would endeavour to improve both, and would leave practical men to do the practical work of building and repairing ships, it would be better for all parties. We place a record of the Walworth Road Baptists in our columns, in order that future readers may, in turning over our pages, be made aware of the extent to which unreason prevailed in 1873. Would it not be better and wiser if "Little Bethel" were to petition Parliament to enact that "all women shall be virtuous, and all teachers of the people sensible?" The curious thing is that Little Bethel does not know in the least what is the existing state of the law.

CORRESPONDENCE.

NAVIGATING AND EXECUTIVE OFFICERS.

We have received the following letter from an officer on a foreign station, and have much pleasure in inserting it:—

"With reference to an article which appeared in the February number of the *Nautical Magazine*, entitled 'The Royal Navy, and Royal Naval Reserves,' I would wish to call your attention to certain statements which are therein made respecting the navigating class.

"At page 89, line 2, the following . . . . 'When the whole practical work is performed exclusively by a separate class of officers of inferior rank.'

"The idea conveyed to the mind of any person not belonging to H.M.'s Naval Service, by this would be, that navigating officers are officers of inferior rank, *i.e.*, that navigating lieutenants are inferior in rank to lieutenants, and so on in the different grades. I would draw your attention to Art. 86, page 18, of the Addenda to the Queen's Regulations and Admiralty Instructions, where the following occurs:—

"'The relative rank of navigating officers with other officers of the military branch shall be as follows:—Navigating lieutenants, with lieutenants, according to seniority.'

"How, then, does the author reconcile this with his statement regarding the inferiority of navigating officers?

"The case he quotes is that of a ship, with a captain and six lieutenants; owing to the sickness of the navigating lieutenant, the duty of navigating the ship having devolved on a navigating midshipman. The reason he assigns for one of the lieutenants not doing the duty is . . . . 'Because not one of the lieutenants would, or could, without losing caste, volunteer to execute the duty of an inferior officer.'

"Who, in this case is the inferior officer?

"Not the navigating lieutenant, because, as I have already shown, he ranks with a lieutenant.

"All the lieutenants in this ship might have had more seniority than the navigating lieutenant, but that would only make him junior, not inferior.

"Would your author, who, I presume, belongs to the executive class, venture to consider an officer of the civil branch, ranking with him, as inferior to him? Would he, for instance, in a mess, or on board a ship, be likely to designate the medical officer ranking with him as his inferior officer?

"At an official dinner, would a lieutenant of one year's standing, be

right in entering the room before a navigating lieutenant of two years seniority, or even a day senior to him?

"Are the facts of conducting a ship from one place to another, by the aid of science, piloting her into intricate harbours, threading her through numerous shipping, taking her alongside wharves, and all the duties devolving on a navigating officer and pilot, where the clear head and cool judgment of an intellectual seaman are required, to be considered as loss of caste by an officer, whose only duty before *may* have been that of seeing decks washed, beef hoisted in, and paint work cleaned; work certainly very analagous to that of a housemaid.

"In conclusion, I must apologise for taking up so much of your time. I must remind you that I labour under great disadvantages in writing on this subject—viz., the facts of serving on a foreign station, and only getting your magazine irregularly, and, also, that of my being a junior officer in the line, whose social status I am endeavouring to defend, and I hope that you will use every means in your power to correct the erroneous statement which has been published to the nautical world."

LIFEBOATS.

We have received a long letter from Captain Ward, R.N., of the Royal National Lifeboat Institution. We insert the greater part, and all the important, of it. Some part we omit because of its style, and some we omit on account of the value of our space. No man living deserves so much attention as Captain Ward when he speaks on the practical part of a subject he so well understands, and but few persons have, as he has done, devoted his energies, which are great, and his judgment, which is sound, to the saving of seamen's lives. It is, therefore, with no little regret that we cannot publish the whole of his letter. He says:—

"Having been through heavy surfs in our coast lifeboats, when on tours of inspection, certainly more than a hundred times, and many hundred times in ordinary weather. * * * The result of my experience is, that I have come to an opposite conclusion from the writer in your *Magazine*—viz., that whilst I acknowledge that each of the four leading types of coast lifeboats have their special advantages, the one by far the most suited for general service on the flat shores of our coast, and which can be most safely and effectually used, is the self-righting lifeboat * * * whilst, on the other hand, the one as strenuously advocated by him—viz., 'Lamb and White's,' I do not feel able even to include amongst the four descriptions to which I have referred, any one of which I would in preference select.

"This opinion is also entirely endorsed by Captain David Robertson, R.N., the assistant-inspector to the Institution, who has held that office

during the last eleven years, and whose knowledge of the different classes of lifeboats is quite equal to mine.

"I will not, however, refer to our united experience alone, although from the opportunities we have had, it is necessarily greater than that possessed by any other persons, unless by the coxswains and crews of a few of our lifeboats; but I will refer to the latter themselves, and if the writer in question, or any one you may depute, will call at the office of the Institution, we can show him literally hundreds of the reports of services to wrecked crews by our lifeboats, in which their behaviour is spoken of in the highest conceivable manner.

"Since, however, the writer makes a special comparison between 'Lamb and White's' lifeboat and that of the Institution, and altogether in favour of the former, it has been thought that the most practical way to reply to his assertions would be to directly ask the opinion of the coxswains and crews of our self-righting lifeboats at those of our stations where the coastguard are supplied with a Lamb and White's boat, or where the local boatmen are, or have been, provided with them, and where, therefore, both descriptions of lifeboat are known. This has accordingly been done, and the honorary secretaries at those stations, seventeen in number, were requested to ask the coxswains and crews who work those lifeboats if they would be willing to exchange their present self-righting ones for others, on Lamb and White's plan.

"The following is a list of the stations, with a summary of the several replies, the latter being, without exception, in favour of the self-righting boat." (Here follows the list, and the individual opinions of coxswains, all of which are very strongly in favour of the lifeboats we called "turn-overs.")

"It is right to state, that the coastguard lifeboats are smaller in size than those of the Institution, but they are the boats specially referred to by the writer of your article. The foregoing evidence from men who have repeatedly risked their lives in the Institution's lifeboats, and performed noble services in them, must surely be looked at as overwhelming; there are, however, some assertions of the writer which must be separately answered.

"1. That self-righting is the fundamental principle of construction in its lifeboats.

"This statement is not correct. Their fundamental principles of construction are the same as the older class of lifeboats—viz., insubmergibility, self-discharge of any water shipped, and great stability. The property of self-righting is only an additional one.

"2. That the fundamental principle of the coastguard lifeboats is that they shall not turn over.

"Three or four of them have upset, with, in one case, the loss of the whole of its crew.

"3. That, as everyone knows, just in proportion to the increase of her qualities as a self-righter, a boat becomes less and less stable laterally, and the less stable she becomes laterally, the more certain is she to capsize.

"The premises of this assertion are entirely wrong, since the heavy iron keel, and other ballast required to effect self-righting, more than make up for the stability lost by not carrying the side air-compartments to the level of the gunwales, as in Lamb and White's plan, and I feel confident that the self-righting boats we now build have more stability than those of the other plan of similar size would have.

"4. The writer pathetically asks, in the name of the working man of an inland town, why his brother working man at the sea-side should be allowed to go to sea in a 'turnover' any more than in a 'coffin,' leaving his widow and children a desolate hearth?

"The proportion of lives lost to lives risked by upsetting in the self-righting lifeboats withing the last twenty-one years, which is the period of their existence, is only 1 out of 16, whereas the proportion in the case of lifeboats which would not self-right, has been 2 out 3.

"5. He refers to the accident to the *Skerries* lifeboat, respecting which he states that the newspapers have been wonderfully dumb, and that there had been no inquiry by any public department.

"Every inquiry was made by this Institution,* and by the Admiralty, through the coastguard, and the assistant-inspector of the Institution attended the coroner's inquest on the bodies of some of the drowned men of the lifeboat's crew. The result of our inquiry being that we are satisfied that under the same circumstances any other lifeboat would either have been upset, or would have had her crew washed out of her.

"Lastly, the writer states it is more than probable that had the lifeboat referred to by Captain Sulivan been built on the self-righting principle, she would have turned over, &c.

"He is not, perhaps, aware how many hundred times the self-righting lifeboats have gone through heavy surfs without upsetting.

"Does the writer suppose that if the lifeboats he repudiates had not far higher qualities than he considers them to possess, the experienced boatmen, who have for so many years risked their lives in them, in the performance of some of the noblest services performed by man, would not long since have likewise repudiated them, and required that safer and more efficient boats should be provided them instead.

"In conclusion, I beg to state that I have no desire to decry the

* We repeat, that there has been no public inquiry, and that the newspapers have been wonderfully dumb.

lifeboats on Lamb and White's plan. They are excellent boats for the coastguard, to enable the officers and men in that service on many points of the coast to do their own duties in them, at less risk than in their ordinary open boats, and they may often be able to render assistance to vessels in distress, and they are better ships' lifeboats, in my opinion, than any others yet in general use."

BOOKS RECEIVED.

Electricity and Magnetism. By Fleeming Jenkin, F.R.S., M.I.C.E., &c. London: Longmans. 1873.

In these days of compulsory education, competitive examinations, and certificates of competency, it is not surprising that numerous efforts should be directed towards rendering knowledge easily and readily attainable. Probably there never was known such a flood of primers, text-books, and popular expositions of scientific and other subjects as now streams from what hitherto have been, to a great extent, hidden founts of knowledge. But now the people are actually drinking of the living waters, and every class and profession are, undoubtedly, being influenced for the better, for "knowledge comes, and wisdom lingers."

We have to notice a valuable contribution to the general knowledge from Professor Fleeming Jenkin, an electrician of eminence and authority. His book is described as a text-book "adapted for the use of artisans and students in public and other schools," on electricity and magnetism; but we think the general public may well be included amongst those for whom the work is adapted. Popular and even learned ignorance concerning those mysterious forces calls loudly for enlightenment, and Professor Jenkin, who has devoted years of study and research to the subject, publishes the result of his labours. His book is clear and intelligible, if the reader honestly seeks knowledge; it contains a vast amount of useful information and explanation of electrical phenomena, and how they are made subservient to man's purposes. To our readers we commend the chapters on "Magnetic Measurements," "Atmospheric and Terrestrial Electricity," and the "Mariner's Compass." They will explain accurately what is declination and deviation, and other matters with which a nautical man should be acquainted; only we must add, that to gain the knowledge fairly and satisfactorily, the reader ought first, to master the "general view of the science in which," as the author observes, "the main phenomena are described, and the terms employed explained." By far the best plan would be for any one who is at all interested in the subject to read the little book from beginning to end. We are certain it would repay the trouble.

Coast Chart of Ireland, showing the Position of the several Lighthouses, Lightships, Buoys and Beacons under the Superintendence of the Commissioners of Irish Lights. Compiled by Commander E. W. Hawes, R.N., Inspector of Irish Lights. Dublin.

To the uninitiated, and even to the generality of seamen, the lighting of a coast may appear a very simple matter, but to those on whom the responsibility devolves, it is a serious and most important duty, for not only have they to consider the best points and positions for establishing the lights, but also how they may be most easily distinguished, so that there may be no chance of one being mistaken for another; added to this, where lights are in the vicinity of dangers, they have not only to act as warnings, but as pilots to passing ships to lead them clear of danger. All this is well known to the seaman, although understood in detail but by few, and we cannot do better than recommend, to those who wish to comprehend the lighting of our coasts, the study of this series of charts of the Irish coast, on which the character of every light is depicted in colour with a brief explanation to each; and although it may be considered too expensive a luxury for every ship frequenting the coast, it certainly should be within the reach of every captain, that previous to sailing he may study it, and make such remarks on his own chart as he thinks necessary.

In addition to the nature of the lights, and their limits of visibility, and the form and colour of buoys and beacons, the railway communication through the country, with the position of the stations, of the coast-guard and lifeboats is shown, and much useful information is added.

SPANISH EMIGRATION REGULATIONS.

Her Majesty's Minister at Madrid has forwarded the copy of a circular addressed by the Department of the Interior to the governors of the maritime provinces, of which the following is the substance:—

1. On the representation of owners and shippers, the tax of 320 reals per head, hitherto exacted as a guarantee of the good treatment of the passengers during the voyage, is abolished.

2. No party of emigrants is to leave a Spanish port without special authority of the governor.

3. No vessel is to carry more passengers than the capacity and tonnage of the ship will allow (after loading provisions), according to the Admiralty ordinances and instructions.

4. The quantity and quality of provisions for the passengers to be ex-

pressed in agreement, and authorities to see that ship carries sufficient water and provisions to fulfil this condition.

5. The cost of passages, which is to be calculated according to length of voyage, and the time within which (not less than two years) it is to be paid, is to be expressed in contract.

6. The guarrantees for payment of passages by passengers also to be expressed in contract.

7. Contracts to be made out in triplicate: one for contractor, second for emigrant, third for governor.

8. Governor or representative to visit every ship, and send certificate of visit to Minister of Interior.

9. Copies of contracts to be sent to representative of Government at the port of destination.

10. Authorizations to embark emigrants not transferable.

11. Emigrants must not pledge more than one-third part of wages towards cost of passage.

12 and 13. The 9th, 10th, and 11th Articles of Royal Order, 1865, to be still applicable to emigration to Brazil; governors to keep strict watch over these expeditions.

14. In case of breach of contract, as regards good treatment of passengers, owners and shippers to be liable to a fine of not less than 200, or more than 500 reals, for each passenger who can justify complaint.

15. Owners and shippers failing to act up to rules, to be forbidden to contract for new expeditions.

Dated at Madrid, 30th January, 1878.

In a subsequent order, the governors of the maritime provinces are directed to insist upon the following conditions with reference to Spanish emigrants:—

1. The presentation of the conscription certificate.

2. That they rest under no criminal accusation or other legal impediment to their departure.

3. That the permission of parents, guardians, or husbands (as the case may be), be obtained.

4. The possession of the certificate of residence.

5. That they observe all that is laid down in Royal Order of September, 1853.

VESSELS WHOSE NAMES HAVE BEEN CHANGED:—*Galata*, of Glasgow, to *Wicklow*, of Glasgow; *Iris*, of Dartmouth, to *Vanguard*, of Dartmouth.

STEAM SHIP BUILDING, 1873.

We stand as follows for the first four months of the present year. The places are arranged according to the tonnage built:—

Place.	No. of Ships. First 3 Months.	No. of Ships Added in April.	First 3 Months. Tons Gross.	Added in April. Tons Gross.
Clyde:				
Glasgow	25	10	45,490	18,486
Greenock	—	4	—	12,437
Port Glasgow	2	2	715	4,660
Sunderland	28	10	84,065	11,928
Tyne:				
Newcastle	16	6	21,120	8,794
North Shields	11	4	5,740	8,068
South Shields	5	1	2,978	333
Liverpool	8	4	9,537	3,010
Dundee	4	—	4,529	—
Hartlepool	8	1	8,865	1,281
Aberdeen	4	2	3,536	592
London	7	—	2,735	—
Belfast	1	—	2,652	—
Stockton	2	1	2,584	219
Kirkcaldy	1	—	2,019	—
Middlesboro'	2	2	1,860	2,783
Hull	8	2	1,548	1,594
Leith	1	—	1,400	—
Bo'ness	1	—	1,080	—
Whitehaven	—	1	—	1,002
Other ports	4	1	524	70
Total	128	51	147,972	65,257

Board of Trade Surveyors.—The following appointments have been recently made:—W. P. B. Manser, Assistant S. Surveyor, Glasgow; T. A. Clark, Assistant S. and E. Surveyor, Plymouth; J. Vercoe, Assistant S. and E. Surveyor, Cardiff; W. Kent, Assistant to Surveyors, London; R. Bretland, Assistant S. Surveyor, Liverpool; E. Lewis, S. and E. Surveyor, London; Capt. G. M. Balfour, R.N., S. Surveyor, Great Yarmouth; J. Francis, Assistant S. and E. Surveyor, Cardiff; J. B. James, Assistant S. and E. Surveyor, London. The Board of Trade have decided on appointing a staff of tape holders at 25s. a week, who will be selected more for strength and capability for hard bodily work, than for a knowledge of decimals. Besides 25s. a week, they will have two suits of uniform, and a suit of overalls each year, and a great coat once in three years. The Board of Trade Marine Department police staff, now on duty in South Wales, are very smart and effective, and in their new uniforms are quite imposing.

SOCIETIES, MEETINGS, &c.

Royal Geographical Society.

12th May, 1873. Major-General Sir H. C. Rawlinson, K.C.B., President, in the Chair.

The paper read was "Journey through Western Mongolia," by Ney Elias, Esq. The distance travelled over was 2,000 miles, accomplished between July, 1872, and January, 1873. The route from Kalgan (the starting-point in crossing the desert of Gobi by the usual route *viâ* Urga to Kiachta) was westerly to the Chinese frontier of Kwei-hua, thence north-westerly to the River Onghin, and afterwards again westerly, along the foot of the Khangai Range, to the city of Uliassutai, which his observations showed to be 5,700 feet above the sea-level. His further journey was impeded by the bands of Mahommedan Mongol rebels, the so-called *Dungans*, who, although badly armed, struck terror into the Chinese garrisons of the towns and carried fire and slaughter wherever they went. He narrowly escaped the band, which a few days before his arrival destroyed the City of Kobdo, west of Uliassutai; arriving there, he saw the charred remains of the outer town and the unburied bodies of slaughtered people scattered over the streets. The Chinese garrison still occupied the fort, and received him and his party with kindness. All his endeavours, however, to obtain assistance for his further journey southward and westward to Kuldja were met by steady opposition, and he finally had to cross the frontier to the Russian town of Büsk. The President informed the meeting that Mr. Elias had not only accomplished a wonderful journey over a tract of Central Asia never visited by a European since the times of Marco Polo, but had executed, unaided, a survey of the whole route travelled. His very numerous observations for longitude and latitude had been computed by Mr. Ellis, of the Greenwich Observatory, and those for heights above the sea level by Mr. Strachan, of the Meteorological Office. For this great service rendered to geographical science the Council of the Society had just awarded to him the Founder's Gold Medal for 1873. The Anniversary Meeting of the Society was announced to take place at 1 p.m. on Monday, the 26th inst.

We are glad to see that Captain F. J. Evans, F.R.S., the chief assistant to the Hydrographer of the Admiralty, has received the honour of Companion of the Bath, and not only from his personal merits, but as a small recognition of the labours of an office as useful in the importance of its work as it is unobtrusive. We hope shortly to see the name of Admiral Richards, the chief of the Department, gazetted to a higher class of the same order.

MONTHLY ABSTRACT OF NAUTICAL NOTICES.

No.	Place.	Subject.
105	Africa—South Coast—Algoa Bay—Bird Islands	Alteration in Light.
106	England—East Coast—Inner Dowsing Shoal	Establishment of a Light Vessel.
107	South Australia—Spencer Gulf	Discovery of a Sunken Rock.
108	Japan—Nipon—Matoya	Establishment of a Permanent Light.
109	Adriatic—Pola	Proposed Harbour Lights.
110	Black Sea—Odessa	Mole Lights.
111	Nova Scotia—South-east Coast—Green Island	Establishment of a Light.
112	United States—Mississippi River—South-west Pass Light	Alteration in Light.
113	United States—Florida and North Carolina	Alteration in Colour of Lighthouses.
114	Canada—Lake Superior—St. Ignace Island Lights	Discontinuance of Lights.
115	Australia—Victoria—Port Phillip—Brighton Rocks	Establishment of a Beacon.

NAUTICAL NOTICES.

105.—Africa.—*South Coast.—Algoa Bay.—Bird Islands.*—A *fixed red* light of the third order is exhibited from the new lighthouse, superseding the two fixed white lights exhibited on the islands.

106.—England.—*East Coast.—Inner Dowsing Shoal.*—In accordance with notice, No. 57 (March number), the light-vessel is now in position, near the north-east end of the shoal. The light is a *green revolving* light showing a flash *every twenty seconds*, elevated 88 feet above the sea. The light-vessel is moored in 10 fathoms at low water springs, 1 mile N.E. by E. from the North Inner Dowsing buoy, in lat. 53° 19′ 20″ N., long. 0° 34′ 20″ E. The light-vessel has the words *Inner Dowsing* on her sides, and in order to render her readily distinguishable in the day from the other light-vessels in the vicinity, two globes are shown on the mast, one above the other. In thick or foggy weather a gong will be sounded.

107.—South Australia.—*Spencer Gulf.*—A sunken rock, with 9 feet on it at low water springs, and 7 to 8 fathoms round it at the distance of a cable, has been discovered about one-third the distance between Dangerous reef and Taylor island, western side of the entrance of the Gulf. The bearings given, place the rock in lat. 34° 50′ S., long., 136° 10′ E.

108.—Japan.—*Nipon.—Matoya.*—The temporary light is now replaced by a permanent light. The new light is a *revolving* white light, of the

fourth order, showing a bright light for *half a minute*, followed by an eclipse of the same duration; it is 102 feet above the sea, and should be seen 15 miles. The tower is painted white, and is situated on the eastern extreme of the point, in lat. 34° 22′ N., long. 136° 54′ 45″ E.

109.—Adriatic.—*Pola Harbour.*—The following harbour lights will shortly be exhibited:—1. A *fixed red* light from a lamp-post on the small mole on the south side of St. Andrea island (Fort Franz). 2. The gas light on San Pietro island will be replaced by a *fixed green* light.

110.—Black Sea.—*Odessa.*—The new mole at the quarantine port at present extends N.N.E. ½ E., nearly half a mile from the lighthouse on Vorontzovski mole, and the extremity of the works in construction is marked by two *red* lights, excepting in bad weather, when they cannot be lighted.

111.—Nova Scotia.—*South-East Coast.—Green Island.*—A *fixed* white light is exhibited on the south point of the island 51 feet above the sea, and should be seen 15 miles. The tower is a square building, painted white. Position, lat 45° 6′ N., long. 61° 32′ 30″ W. The light will serve as a guide to vessels frequenting Country and Fisherman harbours.

112.—United States.—*Mississippi—South-west Pass Light.*—From the 1st day of July, 1873, the following alteration in this light will be made:—A *fixed* white light of the first order will be exhibited from a lighthouse now in the course of erection on a low marshy island S. by W. ½ W., half a mile from the present lighthouse, it will be elevated 128 feet above the sea, and should be seen 17 miles. The tower will be painted black, and is attached to the keeper's dwelling. Approximate position, lat. 28° 58′ 30″ N., long 89° 22′ 30″ W. On the exhibition of the above light, the present South-west Pass light will be discontinued.

113.—United States.—*Florida and North Carolina.*—During the month of June the following alteration will be made in the colour of the under-mentioned lighthouses:—

Cape Canaveral, will be painted in six *black and white horizontal bands*, upper band white.

Cape Lookout, will be painted *chequered black and white.*

Cape Hatteras, will be painted in *black and white spiral bands.*

114.—Canada.—*Lake Superior—St. Ignace Island Lights.*—These lights will be discontinued until further notice.

115.—Australia.—*Victoria.—Port Phillip.—Brighton Rocks.*—A red perch beacon has been placed on the outer patch or rocks opposite the end of Park Street, Brighton. It is about 8 cables from the shore in 5 feet water. *Note.*—Picnic point just open of Green point S.S.E. ½ E. clears the rocks.

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CHARTS, *&c., Published by the Hydrographic Office, Admiralty, to the end of May, 1873, and Sold by the Agent, J. D. Potter, 31, Poultry, and 11, King Street, Tower Hill.*

No.	Scale.		s.	d.
204	m = 3·15	Italy—Gallipoli Harbour	1	0
927	m = { 1·95 / 4·0 }	Sulu Archipelago—Malusa Bay, Basilan and Dalrymple Harbour, Sulu Island	1	6
757	m = 0·23	Red Sea—Gulf of Suez, with views ...	3	6
2566	m = 6·0	Africa, South-east Coast—St. John or Umzimvubu River	1	6

OUR OFFICIAL LOG.

NAVAL COURTS.

17.—*Athenais.*—On the 29th March, 1873, a Naval Court was held at Naples, under the Presidency of H.B.M. Consul, to inquire into a charge of murder preferred against four seamen of the *Athenais*. They were sent to Malta for trial.

18.—*Donald McLean.*—On the 24th October, 1872, a Naval Court was held at New Caledonia, under the Presidency of H.M. Vice-Consul, to decide whether the suspicions against a seaman of the *Donald McLean* were sufficient to justify his being sent to Sydney with reference to a case of murdering some kidnapped Polynesian natives. He was sent to Sydney for further examination and adjudication.

12.—*Royal Union.*—On the 26th March, 1873, a Naval Court was held at Port Said, under the Presidency of H.M. Consul, to inquire into a charge of insubordination and threatening the master's life preferred against a seaman of the *Royal Union*. He was sentenced to be discharged, and imprisonment in Alexandria.

20.—*Maria Scammell.*—On the 18th February, 1873, a Naval Court was held at Valparaiso, under the Presidency of H.M. Consul General, to inquire into a charge of ill-treating a seaman, preferred against the master and mate of the *Maria Scammell*. The mate was sentenced to be imprisoned for six months. The master was severely reprimanded.

7.—*Medina.*—On the 22nd April, 1873, an inquiry was held by the Greenock Local Marine Board, into a charge of drunkenness preferred against the master of the *Medina*. His certificate was suspended for six months.

7.—*Syria.*—On the 23rd April, 1873, an inquiry was held before the Cardiff Magistrates into a charge of inducing four seamen to desert from

the *Syria*, preferred against a runner. He was sentenced to three months' imprisonment with hard labour.

8.—*Challenge.*—On the 17th April, 1873, an inquiry was held before the Cardiff Magistrates into a charge of smuggling preferred against the master of the *Challenge*. He was sentenced to pay a fine of £3 8s. 3d. and costs, or fourteen days' imprisonment.

9.—*James Renforth.*—On the 9th May, 1873, an inquiry was held before the Sunderland Borough Justices to inquire into a charge of harbouring and inducing a seaman to desert, preferred against the master of the s.s. *James Renforth*. He was fined 40s. and costs for enticing, and 60s. and costs for harbouring.

A Naval Court was recently held on board H.M.S. *Torch*, to inquire into the conduct of the padron or master of a boat belonging to Mr. J. Stuart, British factor, of Ambrizette, W. coast of Africa, who was charged with a wilful breach of duty in taking a trading launch, laden with ivory and other goods, out of her proper course, tending to the immediate total loss of vessel and cargo. He was found guilty, and sentenced to six months' imprisonment with hard labour. The prisoner, however, it is supposed, committed suicide by jumping overboard in the Congo stream, as he was missing from the ship on the 28th November.

Royal Navy and Royal Naval Reserve.

Abbreviations.—Ad., Admiral; A., Assistant; C., Captain; Cr., Commander; C., Chief; Cl., Clerk; Cn., Chaplain; D., Deputy; E., Engineer; F., Fleets; H., Hospitals; I., Inspector; L., Lieutenant; M., Midshipman; N., Navigating; P., Paymaster; r., Retired; S. L., Sub-Lieutenant; Sn., Surgeon; St., Staff; N. Inst., Naval Instructor; 1st Class A. E., 1st. Class Assistant Engineer; 2nd Class A. E., 2nd Class Assistant Engineer; N. Ct., Naval Cadet; Ng. Ct., Navigating Cadet; R. N. R., Royal Naval Reserve.

Promotions.—**Ad.**—Robert Hall, C.B., 1855, *r.*; John M. Hayes, C.B., 1855, *r.*; Hon. George D. Keane, C.B., 1855. **Cr.**—Stuart H. Rickman, 1864. **St. Cr.**—John Phillips, 1861; George Robinson, 1861. **L.**—Philip Musgrave, 1869; Henry Leak, 1869. **N. L.**—Charles E. Drake, 1866; James Henderson, 1866; Francis Rowlatt, 1866; Robert M. Bryant, 1866. **C. E.**—Edward T. Read, 1862. **E.**—Henry C. Goldsmith, 1870; Courtenay A. Weeks, 1870; David J. Gyles, 1870; John L. Stevenson, 1870; George F. Laird, 1870. **2nd Class St. Sn.**—John Mockridge, 1860.

Appointments.—**C.**—Radulphus B. Oldfield, 1862, to *Achilles*; Mountford S. L. Peile, 1867, to *Simoon*; Samuel H. Henderson, 1863, to *Audacious*; Robert O. B. Fitz Roy, 1872, to *Agincourt*; James E. Bickford, 1868, to *Serapis*; Richard V. Hamilton, 1862, to *Indus*; Samuel P. Townsend, 1868, to *Crocodile*; James G. Goodenough, 1868, to *Pearl*. **Cr.**—Hon. Henry H. A'Court, 1872, to *Cambridge*; John

R. D. Cooper, 1868, to *Vanguard*, for *Coastguard;* Ferdinand G. Gambier, 1871, to *Hector.* **St. Cr.**—John E. Scudamore, 1870, to *Revenge;* John Symons, 1864, to *Duke of Wellington.* **L.**—Lionel A. De Saumarez, 1869, to *Black Prince;* Hon. Richard Bingham, 1869, to *Britannia;* Jelinger E. Symons, 1870, to *Achilles;* Baldwin Wake Walker, 1868, to *Sultan;* Samuel Pulley, 1863, Nelson Byng, 1868, Leonard S. Ensor, 1869, and Marmaduke L. Kelham, 1871, to *Simcon;* Alexander G. M'Kechnie, 1864, to *Cadmus;* Charles E. Reade, 1863, Arthur G. Fullerton, 1866, Thomas De Hoghton, 1868, and Howard F. Hay, 1872, to *Pearl;* Wadham N. Diggle, 1872, and Walter Hailstone, 1872, to *Royal Alfred.* **N. L.**—Benjamin S. Jackson, 1863, to *Pearl.* **S. L.**—Leslie C. Stuart, Edward B. Eyre, Henry B. Elwyn, James Brant, supernumerary, and James B. Fellowes, supernumerary, to *Pearl.* **N. S. L.**—Andrew S. Mills, 1873, to *Simoon;* Charles H. Hopkins, to *Swallow;* William J. Bullmore, to *Wizard;* George D. Lee, to *Minstrel;* William H. Petley, to *Fox;* John W. Dixon, to *Dasher.* **M.**—H. S. H. Prince Volbrath, L. C. Von Lovenstein, Henry E. Goldfinch, Andrew F. H. Duncan, Henry R. P. Floyd, supernumerary, Montague R. Hayes, supernumerary, Henry A. S. Stanhope, supernumerary, and Lionel A. W. Barnes, supernumerary, to *Pearl.* **C. E.**—William Donnison, 1860, to *Indus*, for *Prince Consort.* **E.**—George Hostey, 1865, to *Glasgow;* John Forrest, 1866, John T. Dowing, 1870, and James Barre, 1871, to *Simoon;* Thomas B. Jordan, 1869, to *Excellent;* John G. Ellis, 1870, and Henry S. Ball, 1871, to *Jackall.* **2nd Class A. E.**—John J. K. Medlen, 1872, to *Glasgow;* Edwin H. Micklewood, 1872, to *Simoon.* **St. Sn.**—Frederic Piercy, 1866, to *Valorous;* John F. Mitchell, 1865, to *Simoon;* James N. Dick, 1868, to *Minotaur;* Henry Slade, 1870, to *Hercules;* Lowry J. Monteith, 1869, to *Resistance.* **Sn.**—Richard A. Mowll, M.D., 1868, to *Resistance;* James Robertson, 1867, to *Black Prince;* James Simnes, 1871, to *Midge;* Edward T. Lloyd, 1868, to *Vanguard;* Alfred G. Delmege, M.D., 1869, and Brian P. S. M'Dermott, 1871, to *Rattlesnake;* John Stiell, M.B., 1872, to *Sirius;* Lewis Edwards, M.B., 1870, to *Agincourt;* William Alger, 1871, to *Simoon;* James Fisher, M.D., 1868, to *Decoy;* James B. Drew, 1867, to *Duke of Wellington;* William C. Ferguson, M.B., 1872, to *Royal Alfred*, additional for disposal. **P.**—Bernard T. Colley, 1855, to *Achilles*, for *Coastguard;* Henry M. Bernard, 1866, to *Valorous;* Charles Barrs, 1861, to *Audacious;* Alexander V. Maccall, 1866, to *Simoon;* Edward J. Giles, 1854, to *Valiant.* **A.P.**—Richard B. White, 1866, to *Lord Warden;* Archibald F. Comyn, 1872, to *Simoon;* James Lyon, 1869, to *Duncan;* Frederick U. Howe, 1866, to *Duke of Wellington*, for disposal. **Cl.**—William H. Rowe, 1873, to *Royal Adelaide.*

RETIREMENTS.—**C.**—Philip Saumarez, 1866. **Cr.**—John C. Best,

1869. **L.**—Andrew R. Gordon, 1871, Frank A. Gataker, 1869, Thomas H. Dickson, 1866, as Commander; William W. Smyth, 1861, as Commander; Arthur C. Jenner, 1872. **St. Sn.**—John E. Acheson, 1861; Arthur W. W. Babington, 1866, as Deputy Inspectors General of Hospitals and Fleets; David Lyall, M.D., 1861, as Deputy Inspector General of Hospitals and Fleets. **Sn.**—Robert Edwardes, 1863. **P.**—William Thorn, 1854, as Paymaster-in-Chief. **A. P.**—Albert H. Carlyon, 1865; William G. F. Hunt, 1866; Francis B. S. Robinson, 1868.

DEATHS.—**Ad.**—George D'Aeth, 1868, *r.*; Thomas S. Brock, C.B., 1867, *r.* **C.**—Alfred Matthews, 1856, *r.*; James W. Vaughan, C.B., 1859, *r.*; Robert Jenner, 1864, *r.*; Charles C. Forsyth, C.B., 1857, *r.* **Sn.**—Thomas E. Molesworth, M.D., 1849, *r.* **P. C.**—John Colwell, 1860, *r.* **P.**—John W. Nicholls, 1837, *r.* **A. P.**—Frederick M. James, 1866.

BOARD OF TRADE INQUIRIES AT HOME.

71. *Charles*, of Wexford, supposed to have foundered between Kingstown and Wexford, on or about the 5th January. Inquiry ordered 23rd January, with Captains Harris and Hight as nautical assessors. Proceedings pending,

77. *Kate*, of Middlesborough, foundered off the Cork light vessel on the 8th February. Inquiry ordered 15th February, and held at Greenwich, on the 18th April, before D. Maude, Esq., with Captain Harris and S. W. Snowdon, Esq., as nautical assessors. Master exonerated. Mr. Snowdon did not concur in the report.

80. *Peru*, of Liverpool, abandoned in the Bay of Biscay on the 22nd January. Inquiry ordered 3rd March, and held at Greenwich before J. H. Patteson, J.P., with Captains Harris and White as nautical assessors. Master exonerated. The Court thought that the ship was undermanned.

83. *Staffordshire*, of Liverpool. Proceedings pending.

92. *Routh*, s.s., of Cardiff, injured her boiler off the Wolf Rock on the 1st March. Inquiry ordered 21st March, and held at Bristol on the 23rd April, before H. J. Mills, Esq., J.P., and W. Pethick, Esq., J.P., with Messrs. T. W. Traill and H. D. Grey, as engineer assessors. Casualty caused by over-loading; and master's certificate suspended for seven days for putting to sea.

94. *C. M. Palmer*, of Newcastle. Proceedings pending.

95. *Talisman*, Liverpool, foundered in lat. 39° 58′ N. Inquiry ordered 28th March, and held at Liverpool on the 9th April, before T. S. Raffles, Esq., stipendiary magistrate, with Captains Hight and Steele, as nautical

assessors. Master acquitted. Casualty occasioned by a leak sprung during heavy weather.

97. *Florence Baker*, of Yarmouth, Nova Scotia, abandoned off Lundy island on the 15th March. Inquiry ordered 3rd April, and held on the 23rd April at Swansea, before J. T. Jenkin, Esq., J.P., and N. P. Cameron, Esq., J.P., with Lieut. W. H. Elton, R.N., and W. H. Neate, Esq., as assessors. Master justified in abandoning his ship.

98. *Venus*, of Glasgow, stranded at Teneriffe on the 1st March. Inquiry ordered 5th April, and held at Glasgow on the 25th April, before J. McPherson, Esq., J.P., and D. McFarlane, Esq., J.P., with Captains Harris and Oates, as nautical assessors. Master in default, and certificate suspended for six months.

99. *Cheviot*, s.s., of London, stranded on Foreland Point, on the 24th March. Inquiry ordered 3rd April, and held at Cardiff, on the 6th May, before R. O. Jones, Esq., stipendiary magistrate, with Captain Hight and Lieut. Elton as nautical assessors. Master in default for not heaving the lead. Certificate suspended for six months.

100. *Triumph*, of Dartmouth, abandoned off St. Trevose Head, on the 16th March. Inquiry ordered 7th April, and held at Dartmouth, on 30th April, before M. Fox, E. M. Turner, and H. Gaskell, Esqs., three of H.M.'s justices of the peace, with Captain Wilson as nautical assessor. Master exonerated. Vessel lost through severe gale of wind.

101. *Joshua and Mary*, of London, stranded on Gunfleet Sand on the 22nd March. Inquiry ordered 11th April, and held at Tynemouth, on the 18th and 19th of April, before J. F. Spence, Esq., J.P., and J. Robinson, Esq., J.P., with Captains Steele and White as nautical assessors. Master in default for not ascertaining the error of compasses. Certificate suspended for six months.

102. *Inchkeith*, of Grangemouth, stranded off Burnmouth on the 29th March. Inquiry ordered 11th April, and held at Berwick on the 29th April, before J. Purves, Esq., mayor, and A. Thompson, and H. Richardson, Esqs., justices of the peace, with Captains Steele and Forster as nautical assessors. Master in default. Certificate suspended for six months.

103. *Ranger*, of Newcastle. Proceedings pending.

104. *Princess Dagmar*, of Liverpool, abandoned off Cape Clear, on the 29th March. Inquiry ordered on the 17th April, and held at Liverpool on the 1st May, before T. S. Raffles, Esq., stipendiary magistrate, with Captains Harris and Steele as nautical assessors. Master exonerated of premature abandonment.

105. *Anglian*, of Dublin. Proceedings pending.

106. *Eliza*, of St. Ives. Proceedings pending.

107. *Bard of Avon*, of Glasgow. Proceedings pending.

108. *Margaret*, of Perth. Proceedings pending.
109. *Sisters*, of Bridgewater. Proceedings pending.
110. *Glendale*, of Newcastle. Proceedings pending.

INQUIRIES ABROAD.

146. *Maria Therese*, stranded at Hakodate, on the 4th December, 1872. Inquiry held at Hakodate, before J. Troup, Esq., H.B.M. Acting-Consul, president; R. Talbot, master mariner; and T. W. Blackstone Esq. Master exonerated.

147. *Petersburgh*, of Leith, stranded at Bermudas on the 7th March. Inquiry held at Bermudas, before Hon. E. Harvey, president; S. H. Harvey, T. H. Thies, and M. A. Frith, Esqrs. Vessel lost through an error of judgment on the part of the pilot. Master exonerated.

148. *E. A. Oliver*, stranded off String's Point on the 14th January. Inquiry held at the Cape of Good Hope, before J. Campbell, Esq., magistrate, and H. Wilson, Esq., nautical assessor. Master's certificate suspended for six months, but afterwards returned to him.

149. *Ida E.*, of St. John, N.B., stranded on Long Island on the 11th March. Inquiry held at New York, before E. M. Archibald, Esq., H.B.M. Consul, and D. H. P. Hains, and F. Crogan, Esqrs. Pilot in default, and his license cancelled.

150. *Jamsetjee Cursetjee Balelebho*, stranded near Sable Island on the 18th November, 1872. Inquiry held at Rangoon, before F. Housman, and A. Eden, Esqrs. The Court found that the master was in default, and cancelled his certificate.

151. *Anne Grieve*, of Sydney, stranded near Walting's Island. Inquiry held at Bahama, before the Hon. E. B. Taylor, J.P., and H. C. Lightbourne, master mariner. Vessel found to be unseaworthy.

152. *Send*, of St. John, N.B., stranded N. of Atwood Cays on the 4th March. Inquiry held at Bahama, before J. M. Minos, Esq., resident justice. Master exonerated.

153. *Clarence*, stranded near Tacking Point. Inquiry held at Sidney, before the President and Vice-President of the Marine Court. The Court found that the master was to blame, and suspended his certificate for six months.

154. *Elizabeth Henderson*, of Shields, stranded at the port of Parangua, on the 1st March. Inquiry held at Rio de Janeiro, before R. Austin, Esq., H.B.M. Consul; Lieutenant Tredidgo, R.N.; and E. Robin, Esq. Master acquitted.

Maritime Law.

"Larnax" v. C. M. Palmer.—Collision.—The Judicial Committee of the Privy Council gave judgment in this appeal on the 20th May, reversing the decision of the Court below, and thus holding the *Larnax* to blame for not showing a light. This is a most important decision, as the Court below has by its decisions gradually led shipmasters to believe that they were blameless for not showing lights, so long as it could not be proved that collision arose from absence of the light.

Breach of Contract.—Eckhams v. Pope and Others.—"The Sailor," (s.)—In this case the plaintiff was a merchant and shipowner in the city, and the defendants were shipowners in Hull, and the action was brought to recover damages by reason of the defendants' steamer *Sailor* not being in the condition she was warranted to be in at the purchase of the vessel by the plaintiff. The defendants by their pleas denied the breach. It appeared that the plaintiff purchased the screw steamer *Sailor* for £8,500, the vessel to be guaranteed to be seaworthy in hull, engines, and boilers, and she went into dry dock, and underwent the usual survey. The steamer loaded, and on the 22nd March she left Hull for Torquay, with coals, and after she left that port it was discovered that the boilers leaked to such an extent as to lessen her steam and headway, and on examination it was found that several of the rivets of the boilers had dropped out, and the leaks were from old defects which had been overlooked. The defective character of her boilers made the passage of the ship difficult, and she put into Dover for repairs, and then proceeded to Torquay. She then went to Cardiff, where some of the crew left her, for further repairs, and sailed for Lisbon. It was alleged that by reason of the defective condition of the boilers and machinery of the vessel, she was not in the seaworthy state that was represented in the guarantee; that the voyage of the ship was delayed, and that in consequence of the delay a loss had been sustained and expenses incurred. For the defence it was contended that the engines and boilers were perfectly sound when the vessel left Hull, and that any damage to them on the passage to Dover or down Channel, must have been caused by the incompetence of the engineers, who had charge of the engines. Mr. Justice Brett then summed up, and after having reviewed the facts as to the condition of the ship, as to whether she was in the condition alleged, said that in the event of the vessel not being in the state required, and that should be their finding, they (the jury) would bear in mind, in awarding damages, that the plaintiff would only be entitled to such an amount as would fairly compensate him for his loss. The jury returned a verdict for the plaintiff, damages £275.—(Court of Common Pleas, Feb. 17.)

LOSS OF HUSBAND.—JONES v. GREAT WESTERN RAILWAY COMPANY.—This was an action brought by plaintiff under Lord Campbell's Act, to recover compensation for damages sustained through the death of her husband, which it was alleged had been caused by the negligence of defendant's servants. It appeared that plaintiff's husband had been killed whilst unloading oilcake in bags from a barge at defendant's warehouses at Brentford, through one of the bags having slipped from the "shoot" whilst being hoisted, and fallen upon him when sweeping up his barge. The defence was contributory negligence, as it was stated that several bags had previously slipped and fallen, and that deceased, who had been cautioned to desist from sweeping, paid no attention to the warning, and was unfortunately killed. The jury returned a verdict for the plaintiff. Damages £250.—(Court of Queen's Bench, Feb. 3.)

MARINE INSURANCE.—THE "NAPIER."—In an action brought by the plaintiffs, Messrs. W. H. and S. Jones, underwriters and insurance agents, of Liverpool, to recover £500 loss which they had sustained owing, it was alleged, to the negligent manner in which the defendants, Messrs. Paton and Co., insurance brokers, of London, had effected a policy of re-insurance upon a ship and cargo. It appeared that in February. 1871, the owners of the *Napier*, which was chartered to proceed from Melbourne to Baker's Island in the Pacific, whence she was to bring a cargo of guano to the United Kingdom, effected a policy of insurance upon the ship for the whole voyage with the plaintiffs, who instructed a Liverpool insurance broker to re-insure a portion of their risk for a sum of £500. The broker, after some correspondence with defendants, instructed them to insure the *Napier* "at and from" Baker's Island to the United Kingdom for £500, at nine guineas premium. The *Napier* was lost at Baker's Island before the loading was complete, and the plaintiffs, who had to pay the owners the full amount of their insurance, claimed the £500, which they supposed was re-insured with the Neptune Insurance Company. The Neptune Company, having refused to pay for a loss which had occurred "at" Baker's Island, as the policy was not for the voyage "at and from" Baker's Island to the United Kingdom, but simply from Baker's Island to the United Kingdom, were sued for that amount, and the action terminated in their favour. The plaintiffs therefore contended that the defendants were, by their omission to insure "at and from" Baker's Island, responsible for the loss sustained through their neglect. For the defence it was argued that even if the words "at and from" had been inserted in the policy, the plaintiffs could not recover, inasmuch as the risk would not commence until the *Napier* was loaded, whereas she was lost before the loading was completed. Verdict for the plaintiffs.—Liverpool Assizes, April 4.

JUDICIAL COMMITTEE OF THE PRIVY COUNCIL.—DECISION ON APPEAL.—"BONGAINVILLE" v. J. C. STEVENSON.—COLLISION CASE.—What is the maritime community to do when the Judicial Committee of H.M. Privy Council "humbly advise" Her Majesty, as their lordships have advised her in this case, is a question of very great material importance. To upset so lamentable a decision as that which has just been delivered will, we fear, require nothing less than statutory enactment. An order in Council was necessary (embodying in prose the sense and substance of "Rule of the Road in Rhyme"), before our judges comprehended the meaning of the phrase "two ships *meeting* each other end on, or nearly end on;" and a statutory enactment will be required to upset the alarming "advice" now given to Her Majesty in the case of the "*Bongainville* v. *the James C. Stevenson.*" The sailing vessel was not provided with lights, showing in the directions required by the regulations, and then, instead of holding on, and allowing the steamer to get out of her way, the sailing vessel starboarded, and thus bobbed about, and got in the way of the steamer. There were two positive, glaring, and indisputable breaches of the rule on the part of the sailing vessel, and yet the Judicial Committee hold that "the steamer *alone* is to blame for the collision." This case is too good a case for the *Nautical Magazine* to pass by without "shaking," and we propose to give it a notice in our next number.

SHIPPING AND MERCANTILE GAZETTE CORRESPONDENCE.
(Reprinted by special arrangement with Sir WILLIAM MITCHELL.)

ENGINEER'S CERTIFICATE.—An Engineer states that he was fifth engineer of a steamer, and held a first-class certificate of competency. The first engineer died on the passage out, the second had only a second-class certificate, while the third and fourth had no certificates. Was he not by law entitled to the position of first engineer?—If the Engineer acted as first engineer from the death of the certificated engineer, who held that berth, until the ship's arrival at her destination, he can claim wages as first engineer for the time he acted in the superior capacity.

PILOTS' LIABILITY.—Can a Trinity House pilot be made to pay for damage done to a vessel at anchor in the river in the day-time, well out in a reach, and swinging with the tide, if such pilot is aboard the vessel in tow, and the mischief is done by the vessel towed?—Under Sec, 872, every Trinity House pilot has to execute a bond for £100, "conditioned for the due observance on his part of the Regulations and Bye-laws of the Trinity House." Art. 7 of those Bye-laws enacts:—"It is ordained that every pilot shall in all cases demean himself civilly and respectfully towards all persons who may require his services, and towards all officers in Her Majesty's Navy, and shall maintain a strict temperance and

sobriety in the exercise of his office, and shall use his utmost care and diligence for the safe conduct of every ship which he shall be entrusted with the charge of, and to prevent her doing damage to others." For breaches of the Bye-laws there are pecuniary penalties enforceable, and it is a question whether the bond of £100 is or is not the limit of a Trinity pilot's liability. It has been argued that the bond is taken by the licensing body for the enforcement of the rules and regulations, and not as a bar to claims for damages by third parties against pilots. The Courts, however, have decided that London District Trinity House pilots are liable only to the extent of their bond.—(The *Alexander*, "Loveday *v.* Rose," A. C., Dec. 11, 1822; the *Pride of the Ocean*, "Keen *v.* Martin," Queen's Bench, Dec. 15, 1854; "Cloney *v.* Power," Common Pleas, June 26, 1837; "Drew *v.* Knight," Queen's Bench, Feb. 20, 1840; "Ross *v.* Doust," Court of Exchequer, Dec. 19, 1856; as also in several cases tried in the City Courts, all of which have been reported in the *Shipping and Mercantile Gazette*.) We are of opinion that if the vessel towed struck a vessel anchored in the River Thames, the pilot would be liable to the extent of his bond for damages incurred, unless the orders of the pilot were not obeyed, or the servants of the shipowner contributed to the accident by neglect of duty, or did not obey the instructions of the pilot. A pilot is supposed to direct the tug as also the vessel towed, both of which, in such a case, are considered as one vessel.

Strike of Pitmen.—My vessel was chartered at Leith on Dec. 31, 1872, to load at Burntisland, in the usual manner, a cargo of steam coal, the charter-party stating the "ship to have all possible despatch in loading, and one and a quarter keel per working day for discharging, and all days on demurrage, at £2 per day." The ship has been at Burntisland thirteen days, and not yet begun to load. I am now informed that the pitmen are on strike. Can I claim demurrage in this case for detention of ship in loading; if so, what would be a reasonable time to allow, the ship being 170 tons dead weight? I must add there are no strike or any other unavoidable clauses in the charter-party.—The charterer is liable for the detention; and if the ship could have got to the place of loading, she should have been despatched in one day. If, however, the vessel was to have waited for her turn, the demurrage days would commence from the time she might have been laden after that turn came. It is unreasonable to detain a ship more than fourteen days in waiting turn and loading.

GENERAL.

PRIZE FOR SHIPS' LIGHTS.

Our readers are aware that Mr. Thomas Gray, who has for so many years taken great interest in all that affects ships, seamen, and commerce, has collected a sum of money, and obtained the co-operation of men of high position, with a view to producing a good spring safety-valve, and a good set of ships' lights. The sum now in his hands for this purpose is £200, and the committee appointed to decide as to the appropriation of it have advised that it should not be awarded to any lamps yet sent in. Their letters are as follows :—

"U. S. Club, Pall Mall, February, 1873.—Sir,—In reply to your letter regarding ships' lights, I beg to state that I am of opinion, under the circumstances, that it will be well to have a fresh trial, and I am of opinion that the light or lights considered to be the *best* should have a further trial of at least *three* months' duration *at sea in the winter* before the prize is awarded. As the trials will take place on nights varying in *darkness* and *clearness*, I beg to suggest that in *addition* to the trial for distance on the present system there be a photometric trial in a room or hall, the lamp being gradually turned until the whole angle is passed over, and heeled over to a given angle also. I believe that this trial will be a very useful *check on the other*. Some very accurate photometric instruments have been lately made, and can easily be produced.—Your obedient Servant (signed), Alfred P. Ryder, Vice-Admiral, Chairman of the Committee."

"3rd February, 1873.—Sir,—After a careful perusal of the pamphlet, as well as your letter of the 31st January, I am of opinion that it is desirable, under the circumstances, to commence *de novo*. Our object is to get the best lights possible, *and those of the most simple construction*, and to have them of such a size and *price* as will suit the ships as well as the means of small owners. Our size lamps as given in the instructions would appear to be of sufficient size, but I hear that the burners are too large, frequently heating the lens, which, on a sea striking it, is apt to crack.—Yours faithfully (signed), R. Robertson, Surveyor-General of Steam Ships."

"11th February, 1873.—Sir,—In reply to your letter of the 31st ultimo, we desire to say that we quite concur in the proposition of having the competition all over again. We think it impossible to give the prize to Messrs. Silber, as after an inspection of their light we consider it simply impracticable as a ship's light, not only from its *extreme complexity*, but also from its not complying with the regulation. In the new competition we think it would be desirable that the reporting officer's

attention should be particularly drawn to the question of reflectors, and the materials of which they are constructed. Competitor's attention might also usefully be drawn to the application of alluminium, which metal has been very highly spoken of as a reflecting medium.—We are, &c., J. A. HEATHCOTE, CHARLES P. WILSON."

"150, Leadenhall Street, London, 8th February, 1878.—Sir,—I have the honour to acknowledge receipt of your letter of 31st ultimo, concerning a pamphlet containing reports on the experimental trials made at Shoebury and Greenwich, with ships' side and mast-head lights, which I have read over with great interest. In paragraph 4 of your letter I note that there seems to be some difficulty in getting side lights, certain, simple, inexpensive, and at the same time effective. It is absolutely imperative that the lamp decided on for the Merchant Service should not only be *simple* and effective, but of *small cost and without chimneys*. I have lately had opportunities of seeing Mr. Silber's mast-head and side lights exhibited privately, and thought them excellent, but they had the fatal chimneys, which 'in their case' cannot be dispensed with. I shall be happy to meet my colleagues at any time or place that may be appointed, to witness a further competition, which, I think, is most desirable. I should certainly like to examine the various lamps at your office, but my time is so taken up with my usual business, that this is the first opportunity I have had of replying to your letter.—I remain, &c. (signed), CHAS. E. PRYCE."

Acting on the advice of the gentlemen whose letters are given above, the following notice has been issued:—

"NOTICE AS TO NEW TRIALS OF SHIPS' LIGHTS.

"All lamps intended for the new trial must be delivered here, with a form filled up, before the 31st July next. There will be no restriction as to size or description of lamp or light. The committee will decide on the general merits of the lamps submitted. No lamp will be tried in competition that is not by a previous test trial proved to comply with the regulations as regards distance and direction. Efficiency, simplicity, safety, and cheapness will be carefully considered in making the award; and a practical test of three months at sea will be required before payment is made to the makers of the selected lamps.

"Competitors are specially referred to the letters of the Committee of Selection.

"THOMAS GRAY.

"April, 1878."

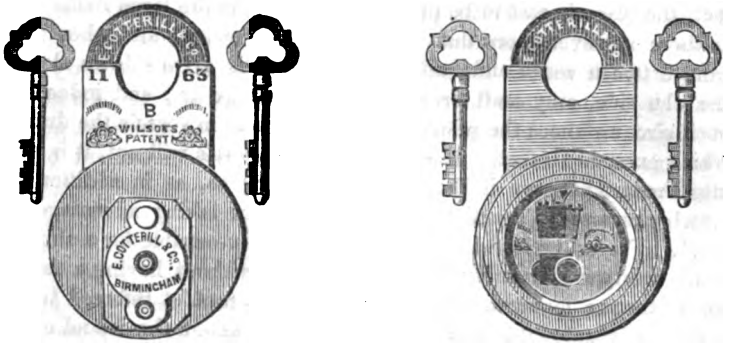
Not the least satisfactory features in this competition is that Mr. Chichester Fortescue, the President of the Board of Trade, headed the list of contributions. This competition is distinct from the safety-

valve competition which was originated by Mr. Gray when acting as editor of this magazine, and to which we refer on another page. These exertions for the safety of the British seaman (who has found many champions in these later days) coupled with the active part in the same work taken by other officials of the Board of Trade, make the recent charges of apathy against that department somewhat ludicrous. We are reminded that it was at the suggestion of the Assistant Secretary of the Marine Department that the council of the Society of Arts offered their gold medal for the best ship's lifeboat, and we may add that our first article this month is a joint report by two of the permanent officials of the Board.

A PADLOCK FOR SAFETY-VALVES.

Such is the ingenuity brought to bear upon the best methods of opening the various kinds of patent and other locks, and in many cases with success, that a thoroughly secure lock is to the commercial world and the public generally, a great acquisition. We do not venture to say that perfection has yet been attained, but a lock the nearest to perfection we have seen is the Acme Lock of Messrs. Cottrill & Co., of Birmingham. Having critically examined it, we can say that it is suitable for all purposes where real security is required. The Acme Lock has been examined by one of our eminent engineers, and he pronounces it to be practically invulnerable, except by such violence or force as must destroy it altogether. The keyholes are quite solid, which prevents the internal parts from being affected by damp or wet, prevents any instrument from being used to injure the lock, and renders the lock gunpowder proof. The key opens up a new phase in the art of locking. From the church-door keys to the Bramah was one step; from all keys to these Acme keys is another. There are two distinct kinds of keys for the Acme Lock, one kind being cylinder shaped, with cams or rings turned upon them. These keys, to our mind, are the best. They represent a spindle with cams set at various angles and various parts of the length; and the other keys are angular, having a double row of teeth cut upon the stem, which enables the keyhole to be made so small and narrow, that it is impossible for any instrument to be inserted to act upon the lock. The same firm has produced a double-locking contrivance, for bankers, jewellers, &c., where extra safety is required. This lock has two separate key holes, and two sets of keys, forming a curious combination of security; the second set of keys (after the lock is locked by the ordinary keys) lock a plate of steel over, and entirely covering the keyhole, at the same time lock a plate behind the head of the bolt. But what we regard with greatest favour is the padlock made on the Acme principle. The shackle slides in and out

and is made smaller than usual, so that it is filled up with the staple, preventing any instrument being used inside the shackle to force it off —not as all others turning on a pin—which is really the weak point of all other padlocks. We give an engraving of these padlocks. If safety-



valves are to be locked up they may as well have a lock that is impervious to picker and weather, instead of having, as is generally the case at present, a lock of which a gross can be bought for 3s. 6d., and which can be opened by a bent nail or a toothpick.

HARBOUR OF REFUGE IN THE CATTEGAT.

A PAMPHLET has recently been published at Berlin, in which the writer points out the want of a really good harbour of refuge in the straits between the North Sea and the Baltic. He considers that the Governments, Chambers of Commerce, and shipowners of the countries adjacent to these waters, are greatly to blame for not doing more to diminish the perils to which vessels are exposed in the Skager Rack and Cattegat, at certain seasons of the year, by taking steps for the construction of a proper harbour of refuge. A scheme for a canal to connect the German Ocean and the Baltic—leaving the former sea opposite the island of Romoë on the west coast of Schleswig and traversing that country—has indeed been under discussion for some years; but the circumstance that this project—which would of course enable vessels to shun the dangers in question altogether—is not now likely to be carried out, at least for some considerable time, is urged as a strong reason for the immediate construction of a harbour. It is true that Frederickshaven, on the north-east coast of Denmark, was designed for this purpose; but, notwithstanding the large sums of money which have been expended on the works there, the harbour is still far from a good one, and is actually declining in the estimation of seamen. It is always more or less difficult to enter, and

when under certain conditions of wind and tide ice packs off the entrance, it is dangerous to attempt to go in. Moreover, there is but a small depth of water, and it entails considerable trouble and expense to maintain what there is, as a great deal of silting-up is always going on. In fact, the place is said to be practically useless for the large Baltic traders, as there is never more than fourteen feet of water; and when it blows from between south and east, and the water is driven down along with the ebb tide, only craft drawing 12 feet can go in; and indeed under such circumstances the pilots do not like to take in vessels the draught of which exceeds 10 feet. Masters of sailing vessels will not, it is said, go into Fredericksbaven if they can avoid doing so, as in addition to the drawbacks already mentioned, it lies badly for taking advantage of the wind. For example, with an easterly wind, favourable for a ship bound to the westward, it is impossible to get out without having a dangerous coast close to leeward. The writer of the pamphlet referred to consequently advocates the construction of a harbour on the island of Hirstholm, which lies some three or four miles to the north-east of Fredericksbaven. Here, he says, is a bay where, by building a mole or breakwater, a splendid harbour would be formed—one easily accessible from every quarter in all weathers, where ships of the largest size could ride safely in all winds. Moreover, the shore of this island is always singularly free from ice, and there is no fear of any silting-up taking place. With the exception of one reef, which could be included by the breakwater, there is absolutely no danger of any kind, the coast being so clear that ships can approach it within four cables' length. It is stated that the establishment of a good harbour on Hirstholm would be attended with important commercial results, as a great portion of the traffic between Germany and Denmark on the one hand, and Sweden and Norway on the other, would pass that way, so that the place would become ere long a kind of outlying port to Gothenburg, which is distant about forty miles. A harbour on Hirstholm would, on account of its freedom from ice, be an especial boon to the Russian winter traders. For some time past St. Petersburg merchants have been debating whether it would not be cheaper to import the last Danish agricultural produce of the season by land, as freights and marine insurance rates are so high towards the end of the year. The Hirstholm harbour would, it is believed, tend to lower these charges, and would give a fresh impulse to the trade of the Baltic generally. Some statistics are given with a view of showing the necessity which exists for a harbour of refuge in this neighbourhood. From these it appears that between the years 1858 and 1868 no fewer than 1,410 vessels were stranded on the Danish coast, of which 904 were totally lost, while 250 of the entire number were wrecked within a circuit of which Hirstholm may be regarded as the centre.—[As a

matter of principle we do not believe in Harbours of Refuge; we think that it will be a sorry day for shipowners when masters are encouraged to creep into port and wait for good weather. We shall be going back to the days of "antient" mariners.—ED.]

STEAM SHIP BUILDING EXTRAORDINARY.

A REMARKABLE instance of what can be achieved when capital and enterprise are brought to bear has just been witnessed on the Tyne. Messrs. C. Mitchell & Co., shipbuilders at Low Walker, have built, launched, and completed one of the largest screw steamers afloat, in the short space of seven months. This vessel has been built for the *Hooper* Telegraphic Company, and is intended to lay a cable along the east coast of South America. Her length between perpendiculars is 340 feet; breadth moulded, 55 feet; depth of hold, 35 feet; and her total weight about 3,000 tons. Her gross tonnage is 4,935 tons, and register tonnage 3,723 tons. She is fitted with *three* enormous tanks for stowing the cable, measuring 53, 51, and 46 feet in diameter, and will hold about 4,200 tons of cable, or nearly 6,000 miles. She has also a double bottom, divided into a number of compartments, which can be filled with water ballast, and are so arranged that any one compartment can be filled to trim the ship as the cable is being payed out. She has been built under Lloyds special survey, and classed A 1. Her engines are of 400 N.H.P., to work to 2,000 I.H.P., manufactured by Messrs. T. Clarke, of Elswick. They are on the compound principle, with two inverted cylinders, 92in. and 52in. diameter, with a stroke of four feet, having all the recent improvements for working expansively, steam starting, &c., &c. The steam for these engines is supplied by four cylindrical boilers, each 12 feet 3 inches in diameter, with three circular furnaces in each. These boilers also supply steam to a pair of 60 horse horizontal engines on deck, which work a small propeller for steering the vessel, when very little way is in her. This propeller revolves fore and aft the ship, and is driven by a wire rope, passing over a grooved wheel or pulley in the crank shaft of the engines. They also supply steam to the engines in connection with the machinery for paying out the cable, &c. Her cabins and saloon are abaft the engines, and are magnificently fitted to accommodate 100 people, who will be engaged in the expedition.

The fact that an immense vessel like this, differing in many respects from any ship ever built, has been designed, laid down, and completed in the short space of seven months, is indeed a surprising fact, but when we look at the dates given below, it appears even more surprising. The first frame was erected on the 1st of November, 1872, and she was all

in frame by 31st of December. Her plating was commenced on the 7th of January, and was completed on the 14th of February; the remainder was finished and the vessel launched on the 29th of March; but deducting Sundays, holidays at Christmas and new year, also wet days, we have a total of only ninety-one clear working days for the putting together of this immense ship. Between the last date and the 14th of April the machinery, masts, rigging, &c., have been fitted, and on the 15th of May she steamed from the Tyne complete, *en route* for London, to take in the cable.

POOR JACK IN THE STATES.

THE seamen of the Mercantile Marine of the United States of America ought to be a gentle, honest, moral, and pious community. They have a "good" magazine all for their own advancement. The publication we refer to is the "Sailor's Magazine and Seaman's Friend," a monthly pamphlet (published in New York) whose aim is announced to be "to present a general view of the seaman's cause, commending it earnestly to the sympathies, the prayers, and the benefactions of all Christian people." In truth, this "Seaman's Friend" is an everlasting and ever present "cherub" under a different form and different name. The member for Derby is, after all, not so original as we had thought. We find that the managers and supporters of the "Seaman's Friend" on the other side of the Atlantic, amount, according to the printed list, to twenty chaplains in the United States, thirty chaplains out of the United States, six clergymen as trustees, besides seventeen other gentlemen, all devoting their time and money and labours to the mental and moral cultivation of the Yankee seaman.

We have been at some pains to read through one number of this "Seaman's Friend," and we must say that the bulk of the matter it contains is anything but matter likely to convey to seamen information of a practical kind. The "Sailor's Friend" is not like any other magazine; it is (we speak of the number before us) with the exception of five columns, entirely made up of collections from other papers—that is to say, all but five columns are admitted to be cuttings. In the *original* matter, and between paragraphs headed respectively "*God's Love*," and "*The Most Curious Place in Northern Europe*," we find the only bit of practical teaching in the book—viz., the verses on the Rule of the Road at Sea, some time since published in London, and written by a well-known Englishman, and these our "Seaman's Friend" produces as original under the signature of "Nautilus." Some persons would call this a pious fraud: but we don't.

The "Seaman's Friend," amongst the *admitted* reproductions, reproduces a description "of a storm at sea." An Englishman, who has

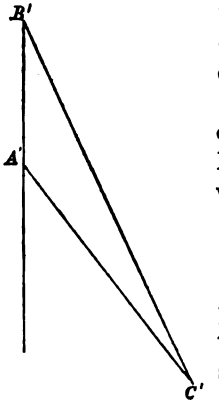
no knowledge whatever of ships, has published a book about them, which has been much read in this country, and it may not be out of place to call public attention to our American cousins' idea of a storm at sea. The vessel on which the narrator took a passage and viewed the storm was the steamer *Greece*, of the National line, bound from Liverpool to New York, with 700 persons, crew and passengers all told. The people on board were "Englishmen, Irishmen, Italians, Swedes, Norwegians, and Americans," and "two flags floated from the masts." This, to begin with, leads us to suspect that something must have been wrong from the commencement. When a ship is so low in the water that not one but two flags float from the masts, people should always be careful; but we will take up the narrative. It states that "the great steamer felt its way cautiously out into the sea. The pilot was discharged; and committing ourselves to the care of Him who holdeth the winds in His fist, we were fairly started on our voyage of 8,000 miles." The *Greece* seems to have had rather a bad passage, but to have behaved admirably, and her machinery stood very severe trials in a way that ought to gratify the owners and builders. The passengers were uneasy and somewhat uncomfortable, but not more so than might reasonably be expected under circumstances somewhat trying to a landsman, and very remarkable if the narrative be exact. The account of the voyage is of questionable utility to the sailor though it is interesting to the landsman, on account of the preciseness with which facts are narrated. For instance, the instruction communicated respecting the bed of the Atlantic is as follows: "You may know that the bottom of the Atlantic is strewn with the ghastly work of cyclones;" and as to manners and habits of cyclones the following is interesting: "Oh! they are cruel winds. They have hot breath, as though they came up from infernal furnaces. Their merriment is the cry of affrighted passengers. Their play is the foundering of steamers. And when a ship goes down, they laugh until both continents hear them. The cyclone seemed to stand on the deck, waving its wing, crying, 'This ship is mine! I have captured it! Ha! ha! I will command it! If God will permit, I will sink it here and now! By a thousand shipwrecks, I swear the doom of this vessel!' There was a lull in the storm, but only that it might gain additional fury. Crash! went the lifeboat on one side. Crash! went the lifeboat on the other side. The great booms got loose, and as with the heft of a thunderbolt, pounded the deck and beat the mast—the jib-boom, studding-sail boom, and squaresail boom, with their strong arms, beating time to the awful march and music of the hurricane." Then as regards the phosphorescence of the ocean, we learn as follows: "The ocean became phosphorescent. The whole scene looked like fire. The water dripping from the rigging, there were ropes of fire; and there were masts of fire; and there was a deck of fire. A ship of fire, sailing on a sea

of fire, through a night of fire." Then, and this is not told as a miracle, but as a fact: "The night was long. At last we saw the dawn looking through the port-holes. As in the olden time, in the fourth watch of the night, Jesus came walking on the sea, from wave-cliff to wave-cliff; and when He puts His foot upon a billow, though it may be tossed up with might, it goes down. He cried to the winds, *Hush!* They knew His voice. The waves knew His foot. They died away. And in the shining track of His feet I read on scrolls of foam and fire." (Here follows a text.) "The ocean calmed. The path of the steamer became more and more mild; until, the last morning out, the sun threw around about us a glory such as I never witnessed before." For our own part, we do not know whether to call this extraordinary statement blasphemous or not: but, under any circumstances, we should regard the facts stated as less miraculous than the navigation by mere mortals of ships which we were recently told at a public meeting, crossed the ocean with deck cargoes twenty to thirty feet high.

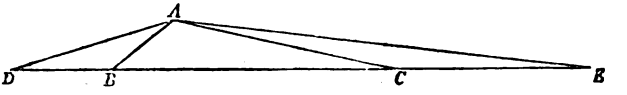
After the storm there came, as is often the case, a calm, but this especial calm presented the following extraordinary phenomena:—"The whole scene lighted up, until it seemed as if angels were ascending and descending upon stairs of fire, and the wave crests changed into jasper, and crystal, and amethyst, as they were flung towards the beach." The narrator says that he "leaned over the taffrail" more than once; but when he did so it does not appear that he suffered from sea sickness, but that he adopted that position with a view to repeating a favorite text of his. This hint might be followed by sailors with advantage when they have a desire to use certain expressions that are of no practical use. In another paper in the same number, admittedly a reproduced one, we find these words:—"The simple fact is, that there is not a steamer which crosses the ocean with a full complement of passengers, which has boats enough to provide for their need, should they be compelled to take to the boats in mid-ocean. We crossed a few weeks since upon a Cunarder which had very nearly one thousand souls on board, yet although she complied in every respect with existing rules, several hundreds of the number must have been unprovided for in case the ship had gone down. 'The cabin passengers would be cared for,' said the captain. We maintain that *all* passengers should be cared for; and the law is not what it ought to be until that is done." These good people who compile the "*Seaman's Friend*" seem to be quite free in their suggestion as to the legislation for "*Cunarders.*" It is, however, at least a comfort to British shipowners to know that they are not alone in suffering from the presence amongst them of emotionalists and other amiables, who, being utterly ignorant of special and technical knowledge, are quite ready to promulgate their ideas of fact, and to suggest legislation on special and technical subjects.

SOLUTION OF THE PROBLEM IN THE *NAUTICAL MAGAZINE* FOR APRIL, 1873.

THE following solution of the problem will be readily understood by those possessing a very slight knowledge of geometry:—Suppose, for the sake of illustration, the wind to have been at north, throughout the whole of the trip, then the course of the ship during the first ten hours would have been north, or on the line A′ B′, at B′ her course would have been altered to three points on the port quarter, or to S.E. by S., on the line B′ C′, the angle at B′ being equal to three points. At C′ the course would be again changed to bring the wind four points on the starboard bow, or to N.W. This would make the angle at C′ equal to one point, and the remaining angle B′ A′ C′ equal to twelve points. We have, then, each of the angles of the triangle A′ B′ C′ given, also the sum of the three sides, 335 miles, to find each side separately.



By Construction.



Draw any line as D E, and from a scale of equal parts make it equal to the sum of the sides 335; from the point D draw D A, making the angle at D equal to half the angle B′, or to 1½ points; from the point E on the same side of the line D E draw E A, making the angle at E equal half the angle C′, or to half a point; let the two lines intersect each other at A; draw D A and A E again from the point A; draw the line A B, making the angle D A B equal to the angle D, or to 1½ point; and from A draw A C, making the angle E A C equal to the angle E, or to half a point. Now we have the angle A B C equal to the sum of the angles D and D A B (Eucl. 32); it is, therefore, equal to three points, and for the same reason the angle A C B is equal to the sum of E and E A C, it is, therefore, equal to one point, therefore the remaining angle B A C of the triangle must be equal to twelve points; the triangle B A C is, therefore, similar to, or equi-angular with the first triangle A′ B′ C′, which represented the ship's track.

But as the angles D and D A B are equal, the opposite sides A B and D B must also be equal, and for the same reason A C must be equal to C E; therefore, A B + B C + A C must be equal to D B + B C + C E, or to D E, or to 335 the sum of the sides; and if the figure be correctly drawn to scale, the sides A B, B C, and A C, measured on the same scale, will give the following results:—

By Calculation.

In the triangle D A E we have given D E = 335, and each of the angles to find A E.

A E = D E (335), cosec D A E (14 points), sin D ($1\frac{1}{2}$ points) = 254·144

In the triangle A C E we have A E just found, and each of the angles given to find A C.

A C = A E cosec A C E (15 points), sin E ($\frac{1}{2}$ point) = 127·670

In the triangle B A C we have A C just found, and each of the angles given to find A B.

A B = A C cosec A B C (3 points), sin C (1 point) = 44·834

In the triangle B A C we have A C, and each of the angles given to find B C.

B C = A C cosec A B C (3 points), sin B A C (12 points) = 162·496

335·

Distance on the first course	...	44·834
,, ,, second ,,	...	162·496
,, ,, third ,,	...	127·67
	Q E D	335·

Note.—The conditions of the problem were designedly given as above in order to avoid the probability of any assumption being made of the possible values of the distances run on each of the courses. By altering the conditions of the problem, thus: If the ship had made her third course with the wind one point before the starboard beam—all other conditions remaining the same as stated in the question, and adopting the above method of solution, the

Distance on the first course would have been	105·587
,, ,, second ,, ,, ,,	146·453
,, ,, third ,, ,, ,,	82·96
	335·

The problem would thus have been more of a practical question,

but the distances would have been within the limits of a probable assumption.

NEARCHUS.

REMARKS ON SOLUTIONS RECEIVED.

The fourth method of solution of the problem by Mr. Alfred Fay, of Clifton Vale, Bristol, is correct, although he should have found his first distance A B by direct calculation, instead of subtracting the sum of the other two sides from 335. The method suggested would have afforded him a proof that he was correct, without any additional calculation. His other three methods are indirect, and, therefore, cannot be admitted. It would be interesting to know how the three distances for the first method came to be assumed with such a remarkable degree of precision. Query, were they found direct by the fourth method, and afterwards adapted to the traverse table as a proof?

The solution by "Bart" is neat and ingenious; but the question may be raised, is it a "direct method?" However, correct results are fairly obtained by this method, and it should, therefore, be accepted. Some small error has found its way into the calculations of Bart, which occasions the slight difference in the result. The sides of his first or auxiliary triangle should be 10, 7·857, and 2·759; and with these new values, the results by this method come out mathematically correct.

Mr. John White, of Millport, Buteshire, in his attempt at solution, has fallen into two errors—first, by supposing the triangle formed by the ship's track to be right angled, instead of oblique; secondly, by assuming an uniform rate of speed to be maintained under the varied circumstances.

Mr. John W. White, of the Navigation School, Bristol, has ignored the triangle altogether, and, by assuming an uniform rate of speed to be maintained throughout the twenty-four hours, has reduced the problem to a simple equation, or $24x = 335$; but, by so doing, has inadvertently placed the longest distance with the ship going head to wind; and, also, opposite the smallest angle; this is *impossible*. For the consideration of those who take an interest in such matters, we give the following two simple and direct methods of solution:—

Having considered the question, we find that the ship's track forms an oblique angled triangle, as A′ B′ C′, the angles of which are equal to 12 points, 3 points, and 1 point, respectively; and the sum of the three sides is 335 miles. We have, then, the sum of the sides given, and each of the angles, to find each side separately.

By Construction.

Draw any line D E, and make it equal to 332, the sum of the sides;

from E draw E A, making the angle E equal to half the angle C′, or half a point; and from D draw D A, making the angle D equal to half the angle B′, or 1½ points; then the angle D A E must be equal to 14 points. Again, from A draw A C, making the E A C equal to E, or half a point, and draw A B, making D A B equal to D, or 1½ point; then the angle A B C = D + D A B = 3 points, and the angle A C B = E + E A C = 1 point; therefore the remaining angle B A C must be equal to 12 points, and the triangle B A C is similar, or equi-angular with the triangle A′ B′ C′, or with that formed by the track of the ship. But A B = D B, and A C = C E (26 1 Eu.); therefore A B + B C + A C = D B + B C + C E = D E, or the sum of the sides = 335; and the triangle A B C is the identical triangle, the sides of which it is required to find; and if the figure be drawn to a scale, the sides of the triangle will show the same value as—

By Trigonometrical Calculation.

In the triangle D A E we have D E given, and each of the angles to find A E, or

A E = D E, cosec D A E (14 points), sin D (1½ point) = 254·144

In the triangle A C E we have A E just found, and each of the angles to find A C.

A C = A E (254·144), cosec A C E (15 points), sin E (½ point) = ... 127·672

In the triangle A B C we have A C just found, and all the angles to find A B.

A B = A C, cosec A B C (3 points), sin A C B (1 point) = 44·832

And in the same triangle we have to find B C, or

B C = A C, cosec A B C (3 points), sin B A C (12 points) = 162·496

Q E D 335·000

J. Jones, Borth.—Received too late.

ORIGINAL PROBLEM.

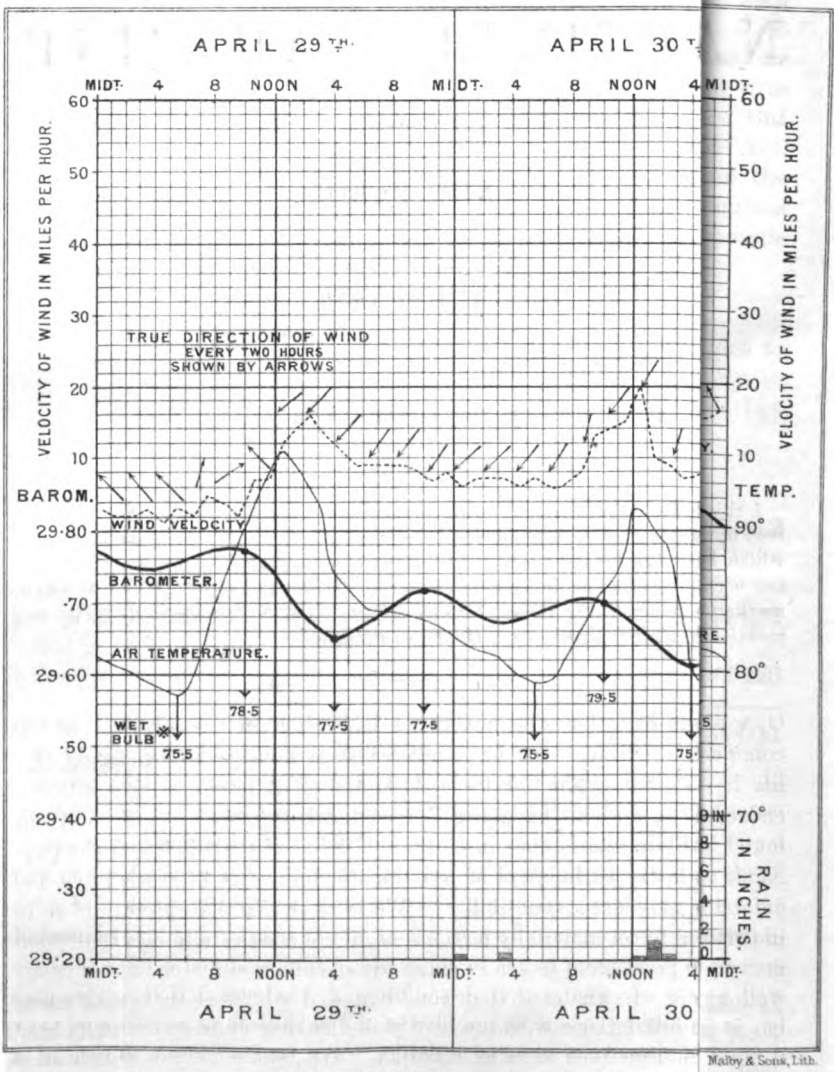
Communicated by Mr. John Williams White, Navigation School, Bristol.

Three boats, P, Q, and R, observe the altitude of a vessel's maimast; at P its altitude was 43° 17′; at Q (stationed W.N.W, distant 20 ft. from P) its altitude was 46° 10′; at R (stationed W.N.W., distant 30 ft. from Q) its altitude was 50° ½′. Required the length of the mast, supposing it to be 10 feet below the surface of the water.

PROJECTION OF THE BAROMETER, THERMOMETER, [illegible]NFALL

AS RECORDED AT MADR[illegible]

BY N. E[illegible]



Malby & Sons, Lith.

※ *The Wet bulb at certain hours is shown by*

The diminish

THE

NAUTICAL MAGAZINE.

NEW SERIES.

JULY, 1873.

EFFECTS OF HUMANITARIAN AGITATION.

I think Mr. Plimsoll ought to remember, and I beg him to remember, that the best of causes may be injured by bad advocacy. * * * These gross charges which have been made (against Mr. Norwood), appear from the evidence which has been put before us, to have no ground for justification at all; * * * and to mark the sense of the Court, I think we should make Mr. Plimsoll pay his own costs.—*Mr. Justice Quain.—The* QUEEN *v.* PLIMSOLL.

OUR pages have for long advocated legislation in the interests of our commercial marine. We have not failed to point out unsparingly that life is lost that ought not to be lost, and that property is needlessly endangered; and we have urged that the true remedies are not to be found in State interference in matters of detail of construction and equipment, or in the curtailment of individual action; but in proclaiming and enforcing personal responsibility. We have shown that surveys of ships in port can never materially lessen loss of life at sea: and that to prevent men from proceeding to sea in ships whose condition and service they are well aware of, whatever that condition and whatever that service may be, is an interference with the liberty of the subject as unwarrantable as it must be disastrous to us as a nation. We regard as the soundest of modern Mercantile Marine legislation Mr. Chichester Fortescue's Act, which proclaims that it is the duty of the shipowner to make and to

keep his ship seaworthy, and which throws on the owner the onus of proof that he has done so. It is to this enactment that the present activity in repairing ships is due. During the whole of the recent agitation we have never hesitated to express our views, notwithstanding that those views are, in the main, opposed to the current of present popular enthusiasm. It has been said of the *Nautical Magazine*, on account of the views it has expressed, that our articles have been unworthy of the usually honest pages they disgrace, and we have been accused of subserviency to departmental influence and departmental ignorance because we have not, as most of our contemporaries have done, adopted as gospel the statements and deductions of enthusiasts whose only remedy for evils that are in the main grossly exaggerated, is interference with personal liberty and the imposition of restrictions on commerce: the lessening of personal responsibility and the extension of Government interference and Government warrantry of seaworthiness. The pampering of the working classes, the stirring up of the employed against the employer, can in no case bear more bitter fruit than in in the case of seamen as against shipowners. It is popular to speak of the sailor as a fine creature, possessing the noblest of qualities—brave, and uproarious, but, in the main, docile; large-hearted, generous, and ready in obedience. It is another method of obtaining popularity to write and speak of the British mercantile seaman as a being who is, if not altogether, at any rate to a very great extent, often at the mercy of an unscrupulous shipowner, who uses him or abuses him and sacrifices his life, just as it may be or may not be convenient or desirable, that, for pecuniary purposes, a ship should reach her destination. These beliefs, like many other popular beliefs, are nothing less than popular delusions. That the British fisherman, the British coasting seaman, and a great number of British foreign-going seamen are good and useful citizens, that they fulfil their contracts and perform their duty, is true; and when we bear in mind what a seaman's duty on great occasions is, our admiration for him is founded in justice. But we must not forget that in the British Mercantile Marine there are a large body of men compared with whom the ordinary shore-going loafer is a gentleman. These black sheep amongst sailors form an infinitely larger flock than the black sheep amongst shipowners: and yet such is the unreason of demonstrative philanthropy that the question of loss of life at sea is too often approached from the view, and is argued on the basis that the dishonest shipowner, and not the incompetent or disreputable seaman, is the cause of great loss of life. It is undoubtedly the duty of the shipowner to make and to keep his ship seaworthy—and, thanks to Mr. Chichester Fortescue, this duty is, as we have said above, distinctly declared in our Statute Book; but it is equally the duty of the seaman to navigate her

in safety, and to do his utmost to rescue her when in peril: and this duty is also declared in our statutes. Owing, however, to the absence of a public prosecutor, and to repugnance of departments not specially required to enforce the law, it has, to a great extent, remained a dead letter. We have always contended that the way to prevent loss of life and property at sea is to enforce the law and to strengthen the action of the common law, if it needs strengthening, rather than by minute statutory requirements, and restrictions, and surveys, to hamper responsibility, and to leave gross dereliction of duty unpunished.

We have shown what is to be expected by teaching seamen to suppose that they are grossly sinned against; and in our number for May, page 352, we said:—"The plea for interfering on behalf of the sailor is, of course, that he knows nothing about his ship when he signs articles; but seeing that he generally signs articles and undertakes to be on board some hours, sometimes twenty-four hours, before the ship sails, he really, if he fulfilled his agreement, would have time to see the state and condition of the ship, and, if not satisfied, would be able to put the law in force. But, instead of this, he does not go on board at the time specified like a straightforward sober working-man ought, but he often lurches down hopelessly drunk, and is put on board just as the ship is leaving, or after she has left; and it is precisely for the benefit of this sort of worthless man who might know the state of his ship before sailing, but who prefers getting drunk, and going on board drunk, and jeopardising himself and the ship, that the present humanitarian agitation proposes to put the British shipowner under police surveillance, and to hamper honest trade in British ships." Crimps, as well as the black sheep amongst seamen, are fully alive to the error and false sentiment now prevalent as regards the helplessness and treatment of seamen; and this being so, and the law not being vindicated, it is with the greatest difficulty that many British merchant ships can be navigated at all. The crew now get, and have for long got, their advance, which the crimp shares with them, and, having received it, they set to work to find excuses for leaving the ship at her first port of call: and so repeat the process on other ships. We do not hesitate to say that these excuses would not be sought for or acted on as often as they now are, were it not—first, because the law as it stands is not vindicated; and, secondly, because of the vicious effects of the present crusade against shipowners, and the injudicious advocacy of the cause of the seamen alone, as against the interests of all other persons and classes interested in shipping.

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right; but we did not expect to find that the correctness of our views would so soon be placed beyond dispute.

The difficulty now attendant on the owning of British ships, and the employment of British seamen, will be apparent on a perusal of the following reports. That this state of things has been gradually increasing is evident from the fact that the cases brought to notice are increasing daily. Two of these cases (the first two we give) refer to circumstances shortly previous to 1872. They are as follows:—

"Ship A. B., from ———— to Shanghai, left the docks in December. Crew very drunk and disorderly. Sent two men on shore to get some clothes, 'they having none but what they stood in.' Said two men not joining again, anchored at Gravesend to procure others. Weather very cold and wet. 13th, having shipped two men, started for sea. 15th, made sail, and beat into Margate Roads; most of the A.B.'s appeared to be worn out with their first day's work; very few of them had sufficient clothing. 17th Dec., twelve men refused duty, saying the forecastle was too cold, and that they would not proceed in the ship. I, the master, explained to them the consequence of refusing duty in such a dangerous place; they replied, we will go as far as the Downs, and no further. They continued to work, doing same in a very slothful, careless manner, and were very insolent to the officers. 19th Dec., weather moderating, made sail and proceeded; anchored in the Downs at six, p.m. 20th, same men again refused their duty, demanding to see a magistrate; four returned to work, and I was obliged to take the remainder on shore, when the magistrates dismissed the case, owing to some blocks being in the forecastle, said blocks having been placed there by the men, after being ordered to put them below. The men then absconded, and left Deal by train, 'assisted by runners.' Telegraphed to London for other men; received them same day; got them on board immediately; everything going on cheerfully afterwards, although the fresh hands had scarcely sufficient clothing to keep them warm."

Another case.—Ship anchored in the Downs.—"On ordering the crew to get the ship under weigh, nine men refused to do so, their complaint being that the ship was insufficiently manned, whereas there are five more working hands than have been in the ship for the three previous voyages. 6 a.m.—Ordered the before-mentioned men to their duty; they again refused to do so. 1.30 p.m.—Again ordered the men to turn to; they refused. When asked what cause of complaint they had, they replied they had none, but that they wanted to see a magistrate, and to leave the ship. 1.20 p.m.—Read the before-mentioned remarks to the above-named seamen, when they replied that the ship was insufficiently manned, and that the forecastle was not fit for the men to live in, and that they won't go in the ship. Produced to the magistrate at Deal,

and the eight men, being all except one, who is discharged, committed to Dover gaol for six weeks' hard labour."

The above cases illustrate forcibly the danger to which life and property are subjected by incompetent and dishonest seamen, immediately a ship leaves our ports, and when she is in a position in which care, competency, and vigilance are essential. Who shall say that men ought not to suffer imprisonment in such a case as the last we have quoted?

We will now take another case—viz.: a case that happened this year, in one of our crowded ports; and this case is one in which an honourable member has actually asked in Parliament whether the crew ought not to be compensated for their imprisonment!

The ship left Liverpool, and sailed for Cardiff, to load. The crew had obtained their advance at Liverpool. At Cardiff several of the men refused to proceed to sea, alleging that the provisions were insufficient, and the beef unfit for use. A survey was ordered by a competent independent officer, who pronounced that the mess beef was sound and wholesome, and the other provisions of good quality and sound and wholesome. The remainder of the crew were satisfied with the provisions, but the disaffected men persisted in their objection, and were sentenced to imprisonment for ten weeks. About a fortnight afterwards the ship having put to sea, and having encountered a gale and put back, some of the crew refused to proceed in her. She was surveyed by a Board of Trade officer. He found some very slight defects, and pointed them out, and recommended that the covering-board should be caulked "in places for about three seams in-board on either side;" but he stated that the boats with which the ship was provided were "in good condition," and, although there were two slight defects in the spars, which practically amounted to nothing, that the ship was a "strongly built ship, and well found in every respect." He found that she had "worked a little in the gale." Seven of the crew of the ship were sent to prison for ten weeks; the remainder consented to go.

Later on, the crew again refused to go to sea; but this time the master appears to have got tired of the business, and he took a fresh crew, who went with the ship, and the last crew were dismissed, as no prosecutor appeared. On the way out to the Cape, some of the last crew mutinied, and, when she arrived there safely, seventeen of them were charged. We have not yet heard the result; but altogether this case shows us how deplorable is the discipline in our Merchant Navy. Men complaining of the provisions and then refusing to go to sea, after the provisions have been pronounced to be good; then complaining of the ship and refusing to go after she was pronounced to be seaworthy by competent authority. The men had obtained an advance of wages.

Another case we may quote, is that of the *Beemah*—

"Off. No. 25,800, the crew signed articles originally at Liverpool, 30th April, 1873. Came round to Cardiff; could not get men. Sent back to Liverpool for sixteen, who received advance notes, payable immediately after leaving Liverpool. Arrived 30th May. Refused duty 31st May. Superintendent police (Major Bond) and three policemen brought them on shore. Before R. O. Jones, stipendiary magistrate, the mayor, and Alderman Alexander, 2nd June, they alleged that the forecastle was unfit, "because the hawser was coming through it, that it was dirty, and that coal was brought through it for ship's use." Here are British seamen, first having got their advance of wages, who object to their sleeping accommodation for reasons which would not hold good if urged against a labourer's or mechanic's apartments on shore. The hawser was coming through it. This would not happen on the voyage. Coals were carried through it. It was a sailing ship, so that once a week was probably the utmost that this would happen. It was dirty, and, poor creatures, they could not clean it. "The Bench asked them if they would have a survey? They replied, no; as they would not go under any circumstances, as the captain had not stuck to his agreement in stating she was a first-class ship. The captain produced a certificate from Lloyds to show that she was just re-classed A 1 for nine years. Fourteen were sent to prison for ten weeks each; one discharged, sick. But here follows the warning to humanitarians—viz.: the master on the same day took off a number of *Austrians* to the ship, then in the roads, to see her. They slept on board that night, and expressed themselves well satisfied with her. They were shipped on 3rd June, to join 4th, when they all went on board sober and steady, but merry, one of them having a musical instrument (concertina), and all of them singing. The one who was discharged sick by the bench, came down at sailing, and wanted to go. Master would not take him. In Court, the men stated the vessel was leaky. This the captain disproved, by stating, that at 8 p.m., on the 30th May, she was pumped and 'sucked' at 17 inches. On the 31st, at 7 p.m., there was 25 inches."

The above case shows that we must, in future, rely more and more on the foreign element, as it is becoming very difficult for British shipowners to employ British seamen.

Another case out of the ever-increasing number is also worth notice. It is as follows:—It was tried in the middle of June. The *Melville*, bound from London to Calcutta, anchored in the Downs, and eight of the crew raised objections and difficulties. They complained that the flour was bad and that the ship was leaky, besides being undermanned. They had to be taken ashore and the ship detained. Everyone on board was compelled to suffer detention and inconvenience, and the owners and

everyone else must suffer pecuniary loss because of these eight men. The Board of Trade were applied to for a surveyor. One of the emigration staff, a fine old practical seaman, was sent down. All this time this ship was detained, and on a survey being held the complaints were pronounced to be groundless in every particular, and the eight seamen were sent to gaol for six weeks with hard labour. And now as to these eight men. Not one of them could produce or would produce a certificate of discharge from his last ship. All had received an advance of wages—some as much as a six weeks' advance—and two were suffering from venereal disease. Had the owner taken a foreign crew, or placed his ship under a foreign flag, the ship would not have suffered detention.

A point not to be lost sight of is, that British shipowners find themselves compelled to transfer their ships to foreign flags, as by this means they are relieved of trouble, as regards their ships, and of still greater trouble as regards their seamen. The case of the *Parga* is well known. It is one in which the ship was delayed, and for which the British taxpayer will get off cheaply if he gets off at £1,500 for interfering with her. She was proved to be seaworthy by a competent court, and her master was, and is, owner. The case of the *Huntress*, which was pronounced to be unseaworthy as a British ship, was sold to Bremen owners, and sailed away under the Bremen flag, with a British crew on board, is another. In that case the interference of the State afforded no protection to the British seamen who sailed in her; but, on the contrary, placed them entirely beyond the interference and protection of British law; and being free from that interference, they could not appeal, if they had desired, but they did not desire, and sailed away with the ship, which reached her destination in safety.

Other British ships are, as we have stated, constantly being transferred to foreign flags, for the sole purpose of escaping from the effects of the present agitation; but the case of the *Huntress* shows that, although the ships may change their flag, there is nothing to prevent them from employing British seamen, and doing with them as the foreign laws, which are stricter than ours, will permit; and, moreover, maintaining discipline and prosecuting their voyages without the fears and annoyance of vexatious interference. It is only on ships under the British flag that British seamen are mostly troublesome. When they find themselves on board ships under a foreign flag, they have to submit to discipline and danger in common with the rest of the crews of those ships; and it is at least a doubtful way to attempt to afford benefit to British ships and British seamen by driving both to a foreign flag.

We wish to state once again that the shipping interest is under an obligation to Mr. Plimsoll for stirring up the hitherto consistently apathetic

House of Commons; but, having done this, he had better leave cooler and wiser heads to legislate: and we cannot, in concluding these remarks, do better than point to the disastrous results likely to follow sensational and so-called humanitarian legislation, and compare it with the good results likely to follow the legal and calm punishment of seamen, owners, and masters, who by their misconduct, endanger the property and life entrusted to their care. One criminal prosecution of an owner who has sent his ship to sea in an unseaworthy condition; one criminal prosecution of a master and his officers who have allowed their ship to get ashore, through the neglect of the ordinary precautions of seamen; and a few criminal prosecutions of seamen for neglect of duty, leading to the loss or endangering of a ship—these prosecutions, coupled with the abolition of the advance note—would, in our opinion, do more to reduce loss of life and property at sea than all the grandmotherly legislation and all the "Plimsollecisms," that could, by any possibility, be crowded into our Statutes in a quarter of a century.

ROYAL COMMISSION.

THE following is the form by which the Royal Commission now inquiring into the Mercantile Marine is appointed. The pages of the *Nautical Magazine* are a fit place in which to record this important document for future reference by our shipowners. It is given under Her Majesty's sign manual:—

VICTORIA R.

VICTORIA BY THE GRACE OF GOD OF THE UNITED KINGDOM OF GREAT BRITAIN AND IRELAND, QUEEN DEFENDER OF THE FAITH, To Our Right Trusty and Right Entirely Beloved Cousin and Councillor Edward Adolphus Duke of Somerset Knight of Our Most Noble Order of the Garter; Our Most Dear Son and Councillor Alfred Ernest Albert Duke of Edinburgh Knight of Our Most Noble Order of the Garter, Captain in Our Fleet; Our Trusty and Well Beloved Henry George Liddell, commonly called the Honourable George Liddell; Our Right Trusty and Well Beloved Councillor Thomas Milner Gibson; Our Trusty and Well Beloved Sir James Hope, Knight Grand Cross of Our Most Honourable Order of the Bath, Admiral in Our Fleet; Our Trusty and Well Beloved Henry Cadogan Rothery, Esquire, Registrar of Our High Court of Admiralty of England; Our Trusty and Well Beloved Arthur Cohen, Esquire, Barrister-at-Law; Our Trusty and Well Beloved Thomas Brassey, Esquire;

Our Trusty and Well Beloved Peter Denny, Esquire; Our Trusty and Well Beloved George Duncan, Esquire, a Member of the Committee of Lloyd's Register; Our Trusty and Well Beloved Edward Dover Edgell, a Junior Brother of the Ancient Corporation of the Trinity House; and Our Trusty and Well beloved Charles Watkins Merrifield, Esquire, Fellow of the Royal Socity, Principal of the Royal School of Naval Architecture and Marine Engineering: GREETING. WHEREAS we have deemed it expedient for divers good causes and considerations that a Commission should forthwith issue to make Inquiry with regard to the alleged unseaworthiness of British Registered Ships; whether arising from over-loading, deckloading, defective construction, form, equipment, machinery, age, or improper stowage; and also to Inquire into the present system of Marine Insurance, the state of the Law as to the liability of Shipowners for injury to those whom they employ; and the alleged practice of undermanning Ships; and also to suggest any amendments in the Law which might remedy or lessen such evils as may be found to have arisen from the matters aforesaid.

NOW KNOW YE, that WE reposing great trust and confidence in your ability and discretion, have nominated, constituted, and appointed, and do by these Presents nominate, constitute, and appoint you, the said Edward Adolphus Duke of Somerset, Alfred Ernest Albert Duke of Edinburgh, Henry George Liddell, Thomas Milner Gibson, Sir James Hope, Henry Cadogan Rothery, Arthur Cohen, Thomas Brassey, Peter Denny, George Duncan, Edward Dover Edgell, and Charles Watkins Merrifield, to be Our Commissioners for the purposes of the said Inquiry. And for the better enabling you to carry Our Royal intentions into effect, We do by these presents authorise and empower you, or any Five or more of you, to call before you, or any Five or more of you, such persons as you may judge necessary by whom you may be the better informed of the matters herein submitted for your consideration, and every matter connected therewith, and to Inquire of and concerning the premises by all other lawful ways and means whatsoever. And also to call for, and examine all such Books, Documents, Papers, or Records as you shall judge likely to afford you the fullest information on the subject of this Our Commission, and to Inquire of and concerning the Premises, by all other lawful ways and means whatsoever.

And We do further by these Presents authorise and empower you, or any Five or more of you, to visit and personally inspect such places in Our United Kingdom as you may deem expedient for the more effectual carrying out of the purposes aforesaid, and to employ such persons as you may think fit to assist you in conducting any Inquiry which you may hold. And we hereby command all and singular, the Justices of the Peace, Sheriffs, Mayors, Bailiffs, Constables, Officers, Ministers, and all

other Our loving subjects whatsoever, as well within Liberties as without, that they may be assistant to you and each of you in the Execution of these Presents.

And Our further will and pleasure is that you, or any Five or more of you, do first report to us under your hands and seals (with as little delay as may be consistent with a due discharge of the duties hereby imposed upon you) with regard to over-loading, and in the next place that you, or any Five or more of you, do in the like manner report to us with regard to the unseaworthiness of Ships arising from deckloading, defective construction, form, equipment, machinery, age, or improper stowage.

And, lastly, in the like manner you, or any Five or more of you, do report to Us upon the other matters referred to you as aforesaid, and that you may have power to Certify unto Us from time to time your several proceedings in respect of any of the matters aforesaid, if it may seem expedient for you so to do.

And We do further Will and command, and by these Presents ordain, that this Our Commission shall continue in full force and virtue, and that you Our said Commissioners, or any Five or more of you, shall and may from time to time proceed in the execution thereof, and of every matter and thing therein contained, although the same be not continued from time to time by adjournment.

And for your assistance in the execution of these Presents, We do hereby authorize and empower you to appoint a Secretary to this Our Commission to attend you, whose services and assistance We require you to use from time to time, as occasion may require.

Given at Our Court at St. James's, the 29th day of March, 1873, in the Thirty-sixth year of Our Reign. By Our command.

(Signed) H. A. BRUCE.

THE Board of Trade have received intelligence from the British Consul at Ancona that the s.s. *Trent*, from Liverpool to Ancona, having put into Palermo, her main-shaft being out of order, her captain, on demand, presented a manifest of cargo, purporting to have about 2,500 bales on board, which, on being compared with the original, on arrival at Ancona, a difference of 300 bales was discovered, for which the captain was fined 40,000 francs, which was afterwards reduced to 100. No loading or discharge took place at Palermo. The above may serve as a warning to masters proceeding to Italian ports to be provided with proper copies of manifests for presentation, whenever required by the Customs' authorities.

THE FALLS OF NIAGARA.

Professor Tyndall, LL.D., F.R.S., recently read a paper at the Royal Institution, intituled "Some Observations on Niagara." It is altogether one of the most charming papers we recollect to have reperused. It contains an accurate statement of the present condition of the falls, and inquires into their geological as well as into their geographical aspects.

Professor Tyndall in speaking of the receding of the falls—that is to say, of the gradual movement *up* the river, of the precipice over which the water falls, makes the following observations:—

"The fact that in historic times, even within the memory of man, the fall has sensibly receded, prompts the question, how far has this recession gone? At what point did the ledge which thus continually creeps backwards begin its retrograde course? To minds disciplined in such researches the answer has been and will be, at the precipitous declivity which crossed the Niagara from Lewiston on the American to Queenston on the Canadian side. Over this transverse barrier the united affluents of all the upper lakes once poured their waters, and here the work of erosion began. The dam, moreover, was demonstrably of sufficient height to cause the river above it to submerge Goat Island; and this would perfectly account for the finding, by Sir Charles Lyell, Mr. Hall, and others, in the sand and gravel of the island, the same fluviatile shells as are now found in the Niagara River higher up. It would also account for those deposits along the sides of the river, the discovery of which enabled Lyell, Hall, and Ramsay, to reduce to demonstration the popular belief that the Niagara once flowed through a shallow valley.

"The physics of the problem of excavation, which I made clear to my mind before quitting Niagara, are revealed by a close inspection of the present Horseshoe Fall. Here we see evidently that the greatest weight of water bends over the very apex of the Horseshoe. In a passage in his excellent chapter on Niagara Falls, Mr. Hall alluded to this fact. Here we have the most copious and the most violent whirling of the shattered liquid; here the most powerful eddies recoil against the shale. From this portion of the fall, indeed, the spray sometimes rises without solution of continuity to the region of clouds, becoming gradually more attenuated, and passing finally through the condition of true cloud into invisible vapour, which is sometimes reprecipitated higher up. All the phenomena point distinctly to the centre of the river as the place of greatest mechanical energy, and from the centre the vigour of the fall gradually dies away towards the sides. The Horseshoe form, with the concavity facing downwards, is an obvious and necessary consequence of this action. Right along the middle of the river the apex of

the curve pushes its way backwards, cutting along the centre a deep and comparatively narrow groove, and draining the sides as it passes them.* Hence the remarkable discrepancy between the widths of the Niagara above and below the Horseshoe. All along its course, from Lewiston Heights to its present position, the form of the fall was probably that of a horseshoe; for this is merely the expression of the greater depth, and consequently greater excavating power of the centre of the river. The gorge, moreover, varies in width as the depth of the centre of the ancient river varied, being narrowest where that depth was greatest."

"The vast comparative erosive energy of the Horseshoe Fall comes strikingly into view when it and the American Fall are compared together. The American branch of the upper river is cut at a right angle by the gorge of the Niagara. Here the Horseshoe Fall was the real excavator. It cut the rock and formed the precipice over which the American Fall tumbles. But since its formation the erosive action of the American Fall has been almost nil, while the Horseshoe has cut its way for 500 yards across the end of Goat Island, and is now doubling back to excavate its channel parallel to the length of the island. This point I have just learned has not escaped the acute observation of Professor Ramsay.† The river bends; the Horseshoe immediately accommodates itself to the bending, and will follow implicitly the direction of the deepest water in the upper stream. The flexibility of the gorge, if I may use the term, is determined by the flexibility of the river channel above it. Were the Niagara above the fall sinuous, the gorge would obediently follow its sinuosities. Once suggested, no doubt geographers will be able to point out many examples of this action. The Zambesi is thought to present a great difficulty to the erosion theory, because of the sinuosity of the chasm below the Victoria Falls. But, assuming the basalt to be of tolerably uniform texture, had the river been examined before the formation of this sinuous channel, the present zigzag course of the gorge below the fall could, I am persuaded, have been predicted, while the sounding of the present river would enable us to predict the course to be pursued by the erosion in the future.

"But not only has the Niagara River cut the gorge; it has carried away the chips of its own workshop. The shale being probably crumbled is easily carried away. But at the base of the fall we find the huge

* "In the discourse the excavation of the centre and drainage of the sides action was illustrated by a model devised by my assistant, Mr. John Cottrell."

† "His words are:—'Where the body of water is small in the American Fall, the edge has only receded a few yards (where most eroded) during the time that the Canadian Fall has receded from the North Corner of Goat Island to the innermost curve of the Horseshoe Fall.'"—*Quarterly Journal of Geological Society, May*, 1859.

bolders already described, and by some means or other these are removed down the river. The ice which fills the gorge in winter, and which grapples with the boulders, has been regarded as the transporting agent. Probably it is so to some extent. But erosion acts without ceasing on the abutting points of the boulders, thus withdrawing their support and urging them gradually down the river. Solution also does its portion of the work. That solid matter is carried down is proved by the difference of depth between the Niagara River and Lake Ontario, where the river enters it. The depth falls from 72 to 20 feet, in consequence of the deposition of solid matter caused by the diminished motion of the river.*

Of the future of the falls he says:—

In conclusion, we may say a word regarding the proximate future of Niagara. At the date of excavation assigned to it by Sir Charles Lyell, namely, a foot a year, five thousand years or so will carry the Horseshoe Fall far higher than Goat Island. As the gorge recedes it will drain, as it has hitherto done, the banks right and left of it, thus leaving a nearly level terrace between Goat Island and the edge of the gorge. Higher up it will totally drain the American branch of the river; the channel of which in due time will become cultivable land. The American Fall will then be transformed into a dry precipice, forming a simple continuation of the cliffy boundary of the Niagara. At the place occupied by the fall at this moment we shall have the gorge enclosing a right-angle, a second whirlpool being the consequence of this. To those who visit Niagara a few millenniums hence I leave the verification of this prediction. All that can be said is, that if the causes now in action continue to act, it will prove itself literally true."

Valuable and clear as are the remarks we have extracted, they fall short, in the pleasure they excite in the reader, of the following passage, which gives us a glimpse of the man of science, of a slight frame, with gray in his whiskers, battling for the love of science with the forces of nature, and revelling in delight in the contest. It speaks somewhat against the theory of modern degeneracy, when we find our men of science not only able to wait upon nature, receive and unfold her teachings and her mysteries in the laboratory, but also physically capable of garnering facts from her storehouses by the exercise of eye, nerve, and muscle:—

"On the first evening of my visit, I met, at the head of Biddle's Stair, the guide to the Cave of the Winds. He was in the prime of manhood—large, well built, firm and pleasant in mouth and eye. My interest in

* "Near the mouth of the gorge at Queenston, the depth, according to the Admiralty Chart, is 180 feet; well within the gorge it is 132 feet."

the scene stirred up his, and made him communicative. Turning to a photograph, he described, by reference to it, a feat which he had accomplished sometime previously, and which had brought him almost under the green water of the Horseshoe Fall. 'Can you lead me there to-morrow?' I asked. He eyed me inquiringly, weighing, perhaps, the chances of a man of light build, and with gray in his whiskers in such an undertaking. 'I wish,' I added, 'to see as much of the fall as can be seen, and where you lead I will endeavour to follow.' His scrutiny relaxed into a smile, and he said, 'Very well; I shall be ready for you to-morrow.'

"On the morrow, accordingly, I came. In the hut at the head of Biddle's Stair I stripped wholly, and re-dressed according to instructions —drawing on two pairs of woollen pantaloons, three woollen jackets, two pairs of socks, and a pair of felt shoes. Even if wet, my guide urged, that the clothes would keep me from being chilled; and he was right. A suit and hood of yellow oilcloth covered all. Most laudable precautions were taken by the young assistant of the guide to keep the water out; but his devices broke down immediately when severely tested.

"We descended the stair; the handle of a pitchfork doing in my case the duty of an alpenstock. At the bottom my guide inquired whether we should go first to the Cave of the Winds, or to the Horseshoe, remarking that the latter would try us most. I decided to get the roughest done first, and he turned to the left over the stones. They were sharp and trying. The base of the first portion of the cataract is covered with huge boulders, obviously the ruins of the limestone ledge above. The water does not distribute itself uniformly among these, but seeks for itself channels through which it pours torrentially. We passed some of these with wetted feet, but without difficulty. At length we came to the side of a more formidable current. My guide walked along its edge until he reached its least turbulent portion. Halting, he said, 'This is our greatest difficulty; if we can cross here, we shall get far towards the Horseshoe.'

"He waded in. It evidently required all his strength to steady him. The water rose above his loins, and it foamed still higher. He had to search for footing, amid unseen boulders, against which the torrent rose violently. He struggled and swayed, but he struggled successfully, and finally reached the shallower water at the other side. Stretching out his arm, he said to me, 'Now come on.' I looked down the torrent as it rushed to the river below which was seething with the tumult of the cataract. De Saussure recommended the inspection of Alpine dangers with the view of making them familiar to the eye before they are encountered; and it is a wholesome custom in places of difficulty to put the possibility of an accident clearly before the mind, and to decide beforehand

what ought to be done should the accident occur. Thus wound up in the present instance, I entered the water. Even where it was not more than knee deep its power was manifest. As it rose around me I sought to split the torrent by presenting a side to it; but the insecurity of the footing enabled it to grasp the loins, twist me fairly round, and bring its impetus to bear upon the back. Further struggle was impossible; and feeling my balance hopelessly gone, I turned, flung myself towards the bank I had just quitted, and was instantly swept into shallower water.

"The oilcloth covering was a great incumbrance; it had been made for a much stouter man, and standing upright after my submersion, my legs occupied the centres of two bags of water. My guide exhorted me to try again. Prudence was at my elbow, whispering dissuasion; but taking everything into account, it appeared more immoral to retreat than to proceed. Instructed by the first misadventure, I once more entered the stream. Had the alpenstock been of iron it might have helped me; but as it was, the tendency of the water to sweep it out of my hands rendered it worse than useless. I, however, clung to it by habit. Again the torrent rose, and again I wavered; but by keeping the left hip well against it, I remained upright, and at length grasped the hand of my leader at the other side. He laughed pleasantly. The first victory was gained, and he enjoyed it. 'No traveller,' he said, 'was ever here before.' Soon afterwards, by trusting to a piece of drift wood which seemed firm, I was again taken off my feet, but was immediately caught by a protruding rock.

"We clambered over the boulders towards the thickest spray, which soon became so weighty as to cause us to stagger under its shock. For the most part nothing could be seen; we were in the midst of bewildering tumult, lashed by the water, which sounded at times like the cracking of innumerable whips. Underneath this was the deep resonant roar of the cataract. I tried to shield my eyes with my hands, and look upwards; but the defence was useless. My guide continued to move on, but at a certain place he halted, and desired me to take shelter in his lee and observe the cataract. The spray did not come so much from the upper ledge as from the rebound of the shattered water when it struck the bottom. Hence the eyes could be protected from the blinding shock of the spray, while the line of vision to the upper ledges remained to some extent clear. On looking upwards over the guide's shoulder I could see the water bending over the ledge, while the Terrapin Tower loomed fitfully through the intermittent spray gusts. We were right under the tower. A little farther on the cataract, after its first plunge, hit a protuberance some way down, and flew from it in a prodigious burst of spray; through this we staggered. We rounded the

promontory on which the Terrapin Tower stands, and pushed, amid the wildest commotion, along the arm of the Horseshoe, until the boulders failed us, and the cataract fell into the profound gorge of the Niagara River.

"Here my guide sheltered me again, and desired me to look up; I did so and could see, as before, the green gleam of the mighty curve sweeping over the upper ledge, and the fitful plunge of the water as the spray between us and it alternately gathered and disappeared. An eminent friend of mine often speaks to me of the mistake of those physicians who regard man's ailments as purely chemical, to be met by chemical remedies only. He contends for the psychological element of cure. By agreeable emotions, he says, nervous currents are liberated which stimulate blood, brain, and viscera. The influence rained from ladies' eyes enables my friend to thrive on dishes which would kill him if eaten alone. A sanative effect of the same order I experienced amid the spray and thunder of Niagara. Quickened by the emotions there aroused, the blood sped exultingly through the arteries, abolishing introspection, clearing the heart of all bitterness, and enabling one to think with tolerance, if not with tenderness, on the most relentless and unreasonable foe. Apart from its scientific value, and purely as a moral agent, the play, I submit, is worth the candle. My companion knew no more of me than that I enjoyed the wildness; but as I bent in the shelter of his large frame he said, 'I should like to see you attempting to describe all this.' He rightly thought it indescribable. The name of this gallant fellow was Thomas Conroy.

"We returned, clambering at intervals up and down so as to catch glimpses of the most impressive portions of the cataract. We passed under ledges formed by tabular masses of limestone, and through some curious openings formed by the falling together of the summits of the rocks. At length we found ourselves beside our enemy of the morning. My guide halted for a minute or two scanning the torrent thoughtfully. I said that, as a guide, he ought to have a rope in such a place; but he retorted that, as no traveller had ever thought of coming there, he did not see the necessity of keeping a rope. He waded in. The struggle to keep himself erect was evident enough; he swayed, but recovered himself again and again. At length he slipped, gave way, did as I had done, threw himself flat in the water towards the bank, and was swept into the shallows. Standing in the stream near its edge, he stretched his arm towards me. I retained the pitchfork handle, for it had been useful among the boulders. By wading some way in, the staff could be made to reach him, and I proposed his seizing it. 'If you are sure,' he replied, 'that, in case of giving way, you can maintain your grasp, then I will certainly hold you.' I waded in, and stretched the staff to my

companion. It was firmly grasped by both of us. Thus helped, though its onset was strong, I moved safely across the torrent. All danger ended here. We afterwards roamed sociably among the torrents and boulders below the Cave of the Winds. The rocks were covered with organic slime which could not have been walked over with bare feet, but the felt shoes effectually prevented slipping. We reached the cave and entered it, first by a wooden way carried over the boulders, and then along a narrow ledge to the point eaten deepest into the shale. When the wind is from the south, the falling water, I am told, can be seen tranquilly from this spot; but when we were there, a blinding hurricane of spray was whirled against us. On the evening of the same day, I went behind the water on the Canada side, which, I confess, struck me, after the experiences of the morning, as an imposture."

Erosion.—Professor Tyndall in his paper on the Falls of Niagara makes the following important remarks on Erosion:—

"Time and intensity are the main factors of geologic change, and they are in a certain sense convertible. A feeble force acting through long periods, and an intense force acting through short ones, may produce approximately the same results. To Dr. Hooker I have been indebted for some samples of stones, the first examples of which were picked up by Mr. Hackworth on the shores of Lyell's Bay, near Wellington, in New Zealand, and described by Mr. Travers in the Transactions of the New Zealand Institute. Unacquainted with their origin, you would certainly ascribe their forms to human workmanship. They resemble flint knives and spear-heads, being apparently chiselled off into facets with as much attention to symmetry as if a tool guided by human intelligence had passed over them. But no human instrument has been brought to bear upon these stones. They have been wrought into their present shape by the windblown sand of Lyell's Bay. Two winds are dominant here, and they in succession urged the sand against opposite sides of the stone; every little particle of sand chipped away its infinitesmal bit of stone, and in the end sculptured these singular forms.

"The Sphynx of Egypt is nearly covered up by the sand of the desert. The neck of the Sphynx is partly cut across, not, as I am assured by Mr. Huxley, by ordinary weathering, but by the eroding action of the fine sand blown against it. In these cases nature furnishes us with hints which may be taken advantage of in art; and this action of sand has been recently turned to extraordinary account in the United States. When in Boston, I was taken by Mr. Josiah Quincey to see the action of

the *sand-blast*. A kind of hopper containing fine silicious sand was connected with a reservoir of compressed air, the pressure being variable at pleasure. The hopper ended in a long-slit, from which the sand was blown. A plate of glass was placed beneath this slit, and caused to pass slowly under it; it came out perfectly depolished, with a bright opalescent glimmer, such as could only be produced by the most careful grinding. Every little particle of sand urged against the glass, having all its energy concentrated on the point of impact, formed there a little pit, the depolished surface consisting of innumerable hollows of this description. But this was not all. By protecting certain portions of the surface and exposing others, figures and tracery of any required form could be etched on the glass. The figures of open iron-work could be thus copied; while wire gauze placed over the glass produced a reticulated pattern. But it required no such resisting substance as iron to shelter the glass. The patterns of the finest lace could be thus reproduced; the delicate filaments of the lace itself offering a sufficient protection. All these effects have been obtained with a simple model of the sand-blast devised for me by my assistant. A fraction of a minute suffices to etch upon glass a rich and beautiful lace pattern. Any yielding substance may be employed to protect the glass. By immediately diffusing the shock of the particle, such substances practically destroy the local erosive power. The hand can bear without inconvenience a sand-shower which would pulverize glass. Etchings executed on glass with suitable kinds of ink are accurately worked out by the sand-blast. In fact, within certain limits, the harder the surface, the greater is the concentration of the shock, and the more effectual is the erosion. It is not necessary that the sand should be the harder substance of the two; corundum, for example, is much harder than quartz; still, quartz sand can not only depolish, but actually blow a hole through a plate of corundum. Nay, glass may be depolished by the impact of fine shot; the grains in this case bruising the glass before they have time to flatten and turn their energy into heat.

"And here, in passing, we may tie together one or two apparently unrelated facts. Supposing you turn on, at the lower part of a house, a cock which is fed by a pipe from a cistern at the top of the house, the column of water, from the cistern downwards, is set in motion. By turning off the cock, this motion is stopped; and when the turning off is very sudden, the pipe, if not strong, may be burst by the internal impact of the water. By distributing the turning of the cock over half a second of time, the shock and danger of rupture may be entirely avoided. We have here an example of the concentration of energy in *time*. The sand-blast illustrates the concentration of energy in *space*. The action of flint and steel is an illustration of the same principle. The heat required to generate the spark is intense, and the mechanical action being moderate,

must, to produce fire, be in the highest degree concentrated. This concentration is secured by the collision of hard substances. Calc-spar will not supply the place of flint, nor lead the place of steel in the production of fire by collision. With the softer substances, the *total* heat produced may be greater than with the hard ones, but to produce the spark, the heat must be intensely *localized*.

"But we can go far beyond the mere depolishing of glass; indeed, I have already said that quartz sand can wear a hole through corundum. This leads me to express my acknowledgments to General Tilghman, who is the inventor of the sand-blast. To his spontaneous kindness I am indebted for some beautiful illustrations of his process. In one thick plate of glass a figure has been worked out to a depth of $\frac{3}{8}$ths of an inch. A second plate, $\frac{7}{8}$ths of an inch thick, is entirely perforated. Through a circular plate of marble, nearly half an inch thick, open work of the most intricate and elaborate description has been executed. It would probably take many days to perform this work by any ordinary process; with the sand-blast it was accomplished in an hour. So much for the strength of the blast; its delicacy is illustrated by a beautiful example of line engraving, etched on glass by means of the blast.

"This power of erosion, so strikingly displayed when sand is urged by air, renders us better able to conceive its action when urged by water. The erosive power of a river is vastly augmented by the solid matter carried along with it. Sand or pebbles caught in a river vortex can wear away the hardest rock; 'potholes' and deep cylindrical shafts being thus produced. An extraordinary instance of this kind of erosion is to be seen in the Val Tournanche, above the village of this name. The gorge at Handeck has been thus cut out. Such waterfalls were once frequent in the valleys of Switzerland; for hardly any valley is without one or more transverse barriers of resisting material, over which the river flowing through the valley once fell as a cataract. Near Pontresina in the Engadin, there is such a case; the hard gneiss being now worn away to form a gorge through which the river from the Morteratsch glacier rushes. The barrier of the Kirchet above Meyringen is also a case in point. Behind it was a lake, derived from the glacier of the Aar, and over the barrier the lake poured its excess of water. Here the rock being limestone was in great part dissolved; but added to this we had the action of the sand particles carried along by the water, each of which, as it struck the rock, chipped it away like the particles of the sand-blast. Thus by solution and mechanical erosion the great chasm of the Finsteraarschlucht was formed. It is demonstrable that the water which flows at the bottoms of such deep fissures once flowed at the level of what is now their edges, and tumbled down the lower faces of the barriers. Almost every valley in Switzerland furnishes examples of this

kind; the untenable hypothesis of earthquakes, once so readily resorted to in accounting for these gorges, being now for the most part abandoned. To produce the Canons of Western America, no other cause is needed than the integration of effects individually infinitesimal."

ADVANCE NOTES.

These notes are the chief cause of disaffection between owners and masters on the one hand, and seamen on the other; and it is not verging at all from the strictest accuracy to assert that these notes are directly one of the chiefest causes of the demoralization of our merchant seamen, and are, indirectly, the cause of the loss of much property and many lives.

The advance note may be traced to very early times, and cash advances to times still more remote. Even before the Consolato del Mare, the oldest collection of maritime law extant, a collection written in a mixture of Spanish, Catalan, and Italian, the practice of advancing money to seamen existed. In those days it would appear that, although the crew were placed under very strict discipline, as regards their conduct on board, and their duties in navigating and sailing the ship, they were, as regarded the whole venture, in a sort of co-partnery with the owners and master. The members of the crew had a part of the ship set apart for their own merchandize, and the owner, or master, or captain, for there were generally two persons in charge, one of the ship, and one of the venture, were required by law and custom, under somewhat severe penalties and inconveniences, to advance money to the crew for the purpose of procuring supplies. In later days, now that seamen are purely labourers, skilled or otherwise, the advance at the commencement of the voyage has taken the form of an advance of so many months' wages; and thus it is that we find at the present time that seamen, who generally are engaged by the month, are the only class of labourers who universally receive an advance of wages before any work is done, and even before they visit or see the ship in which they undertake to serve.

The advance originally was in cash, and for a long period in the history of our Mercantile Marine it continued to be in cash. Under the earliest form, and the early circumstances of engagement and conditions of service, an advance was necessary; but the question for consideration is, whether it is necessary any longer. That it is attended with gross abuse is evidenced by two facts: first, that it has, with rare exceptions, dwindled from three to two months' wages to one month's wages; and,

secondly, that it is no longer paid in cash, but by an advance note, which is an undertaking to pay the sum (of one month's wages) after the seaman has been at sea for forty-eight hours in the ship for which he has engaged himself.

A note granted at the same time as the advance note is the allotment note, a document conferring as great a boon on the family of the sailor as the advance note causes him, and all connected with him, damage and distress. Before we urge our objections to the advance note, we will refer to the allotment note. It is an undertaking on the part of the owner of the ship to pay to the allottee (the wife, mother, child, grandmother, or grandchild, as the case may be) of the seaman, so long as the seaman remains in the ship, and the owner cannot refuse to pay to the allottee the sum allotted (called the monthly money), unless he has evidence that the man has ceased to serve. The sum allotted monthly by the seaman is half his pay. By the use of the allotment note, the wife of the seaman, if she be a respectable person, and the seaman fulfil his engagement, receives regular pay, so that she is protected from poverty during her husband's absence. The seaman's wife is of a class that work for their living, and the assistance afforded to his family by the allotment note, while he is away, cannot be too highly estimated. We have, therefore, in theory, everything to say in favour of the allotment note, and we believe that, in practice, it answers the purpose for which it is designed.

The advance note is altogether different. The only ground on which its existence can be defended is, that it is intended to enable the seaman to purchase necessary clothing for the voyage. If the seaman had no other means of possessing himself of clothing for a voyage, and if the advance note provided him with that clothing, but little could be said against it; and our inquiry must now be directed towards ascertaining whether a seaman should, necessarily, at the commencement of every voyage be without clothing, and, if so, whether the advance note does provide clothing for him.

We recently visited many of the ports in the United Kingdom, and were agreeably surprised to find that even among seamen, and greatly among that portion whose habits of "financial thoughtfulness," are referred to in the first article of the *Nautical Magazine* for last month, the advance note is correctly estimated as a source of evil. It is within our knowledge that a deputation of seamen, representing several thousand men, waited upon the Assistant-Secretary of the Marine Department of the Board of Trade, when at Liverpool, with an urgent petition for the abolition of the advance note. These men best know its evils, and they pointed them out in homely and forcible English. If (they urged) the advance note were necessary for the purposes intended, or

were applied for those purposes, they would have nothing to say against it, but seeing that it was not necessary, and was certainly not applied for the intended purposes, but went into the pockets of crimps and improper and diseased women, and was the means of reducing the men to a state of beastliness at the commencement of a voyage, it was an evil. And now we come to consider whether an advance note is a necessary evil. Last August, in a northern port, we were standing one evening near the entrance of one of the music halls, when two drunken sailors, one of them very drunk, came up, and attempted to enter. They were sent away, and were very noisy. Wishing to follow the fortunes of these two men for a short time, we waited about and observed them. In about a quarter of an hour they determined to try again their luck at getting into the hall, where "Ben Bolt," and "The Dumb Girl of Genoa," were being performed. We heard our two seamen explaining to each other, very lengthily and hazily, that they would not be recognised as having made a previous and unsuccessful attempt and would be sure to pass in this time. They were, however, that time as unsuccessful, but more irate than before. It was after their second unsuccessful attempt that we spoke to them, and we found out that they had that day been paid off from a long voyage, and were desirous of getting rid of their "something" money. It was in vain that we pointed out that it would be well to go to bed that night, and visit the "Dumb Girl of Genoa" on the following evening. Their only reply was that they had their "something" money, and meant to get rid of it that night, which they probably did, as later on in the evening we observed them each in tow of a morganatic spouse.

Being curious to learn what money these two men had, we went next day to the Mercantile Marine Office, and found true enough that many seamen had just been paid off with large sums of money. Some of these men would have, probably, from £70 upwards, and many of them would succeed most effectually in getting rid of it in one night. It is a fact that most of the superintendents will be able to vouch for, that seamen, even some who deposit money in the superintendent's hands, will get through these very large sums of money in a few days, and that not until it is all gone, and their clothes gone, too, do they look out for another ship. Now, what we maintain is, that amongst other evils, the advance note directly encourages the squandering of the whole of the wages of the previous voyage. When a seaman returns from a voyage, with cash in hand, often to a large amount, and serviceable clothes, for they often get clothes during the voyage, why should he, as a matter of course, squander it in accumulating disease, and, also, as a matter of course, expect to be provided with a new outfit by an employer for whom he has not yet done one stroke of work? Our contention is, that the

advance note is not necessary, because the seaman at the time of leaving his ship, invariably has an outfit, and that the note directly encourages vice and extravagance, because, relying on it, the seaman squanders every penny of his previous earnings, and often parts with his clothes as well. And, besides, if crimps and improper women knew that they could not reckon with certainty on the advance note, they would turn him off before he had parted with his clothes, and in the certain knowledge that when he got sober, and could not go to sea for want of clothes, they would be called to account.

But now we have to consider whether, after all, the advance note is of any immediate benefit to the sailor, and here, again, we must say no. In the first place, if he is a married man, it stops his allotment note for a month, and so impoverishes his family. In the second place, a seaman never gets the full benefit of the note, and rarely half of it; at least, if he does, he is unusually fortunate. The note is of no value if the sailor deserts from his ship, and therefore no tradesman can, as a matter of business, receive it as payment for slops, without very large discount, and no one will "cash" it on even terms so favourable as the slop-seller. So that, assuming that the note is to be turned into clothes, we see how very far it will fall short of finding the proper supply. But there is still a far graver evil attaching to the note. The seaman having come ashore with perhaps £50, or more, has been leading a gay time of it for three or four days. First, he gets a long-faced hat, patent boots, and shore-going clothes, and possibly a watch, and treats his fair friend to an article of dress or two; all this he does very early on coming ashore, and under the guidance of the keeper of the "establishment" he resides at. He then incurs all sorts of expenses, swallows all sorts of drinks, and for a day or two is only half conscious. By the fourth or fifth day he is reminded that his money is gone, but that if he pawns the clothes and things he has bought he can hold out still for a further cruise. This he does, and next day, or the day after, is again reminded of his impecunious state, and further finds that he is in debt to his host to the extent of a few pounds besides. Now, his host plays an important part; he and his establishment and connexions have profited to the extent of, perhaps, to put the estimate low, £250 per cent. on everything they have supplied, and the man must be got away to prevent reaction and inquiry. Mine host, therefore, sobers Jack down a bit, and Jack gets a ship and an advance, when mine host again becomes affectionate. He takes the advance, and in consideration of former transactions, gets a few clothes together; but as he has no idea of being done out of the advance by Jack bolting, Jack has a parting glass, sometimes drugged, and in a semi-stupified state is kept till he is deposited on board; where, after having endangered the ship by his incompetency when drunk, his first act on

becoming sober is probably to complain of the ship as unseaworthy, and to try to get another advance.

We do not say that this description applies to the bulk of our merchant seamen, or to respectable boarding-house keepers like Jeffard; but we say it applies to a great mass of them: and our conclusion is that by respectable seamen the advance note is not wanted, and, secondly, that the evil it does, practically, in cases where, theoretically, it might do good, is so great, that its existence ought to be no longer possible.

In the above necessarily imperfect remarks we have not referred to advance notes and crimps abroad, and "blood-money," as it is appropriately called abroad. In some places like San Francisco, New York, and even Quebec, the effects are infinitely more disastrous to British ships and British seamen, and more enriching to crimps than in this country, for the reason that the advance, instead of being, as here, from fifty shillings to eighty-four shillings, is considerably higher. In San Francisco, the "blood-money" for a seaman has reached as much as forty dollars.

WRECKS IN 1872.

AT HOME, *i.e.*, ON AND NEAR THE COASTS OF THE UNITED KINGDOM.—Wrecks, casualties, and collisions, resulting in total loss, 501. Casualties and collisions, attended with partial damage, 1,457, being a total of wrecks, casualties, and collisions, of all sorts, at home, of 1,958. Number of lives lost, 608.

ABROAD.—Wrecks, casualties, and collisions, resulting in total loss, 864. Casualties and collisions, resulting in partial damage, 1,616, being a total of wrecks, casualties, and collisions of all sorts, to British ships abroad, and to foreign ships on the coasts of our possessions abroad, of 2,480. Lives lost, 1,980.

TOTALS.—The wrecks resulting in total loss are, 439 at home, and 836 abroad = 1,275. Collisions, 62 at home, and 28 abroad = 90. Partial damages, 1,110 casualties at home; 1,395 abroad = 2,505. Collisions, 347 abroad, and 221 at home = 568. Lives lost, at home, 608; abroad, 1,980.

GRAND TOTALS.—Ninety ships totally lost by collision; 1,375 ships totally lost from other causes; 668 ships partially damaged by collision; 2,505 partial damages from other causes; 4,438 wrecks, casualties, collisions, and disasters of all sorts; and 2,588 lives lost.

It must be borne in mind that these numbers are for British ships all over the world and wherever bound, and for foreign ships anywhere within British jurisdiction.

SHORT YARNS FOR SAILORS.—No. 3.

On Interest in the Improvement of One's Country.

Every man engaged in any pursuit, no matter what, does, through the medium of that pursuit, affect not only himself, but in some slight degree, seen or unseen, his family, his social sphere, his country; so that all habits, industries, and activities may be regarded in a patriotic as well as in a personal direction, and one is entitled to ask how they affect the well-being of the community as well as how they serve the interests of the individual. Primarily, no doubt the leading motive and instinct in all kinds of daily work is to procure daily bread and the comforts and conveniences of life: by law of Nature and of Providence it must be so, and there are many who never obtain a view beyond this narrow horizon and never consciously work for ulterior ends on a large scale. Nor is it any reproach to them that their lives should be so small in scope; for the majority of them cannot help it; the necessities of the day claim the thoughts and feelings thereof, and there is a certain concentration of mind necessary for success even in small objects that seem unfavourable and hindering to the formation of larger views. Now and then, however, we get a glimpse of life in its wider relations; we perceive in a dim sort of way how the qualities of the parts affect the character of the whole, how the little helps to build up the great, and the trivial and temporary things of the year give a tone and colour to the aspects of the age. In the moral education of humanity it is right to inculcate in each a certain sense of responsibility, with wider bearings than those usually recognised. A man should be taught that his habits and pursuits affect for good or for evil, whether he is conscious of it or not, the whole community among whom he dwells. He should be taught to take an interest in the improvement of his country, in the increase of its wealth and material resources; in the honour and integrity of its rulers, legislators, and official men of all kinds; in the growing and expanding freedom of its institutions; in the removal of its prejudices; in the supply of its defects; the correction of its errors; the spiritualising of its taste, and the infusion of a better spirit into its manners. And every poor man may be assured that however obscure his position, however apparently mean his trade or calling, he may by improving himself improve his country; by honourably enriching himself he may honourably enrich his country; by taking into his own mind the faintest beam of heavenly light, or into his own heart any fresh glow of heavenly love, he is in some degree imparting dignity and greatness to the nation to

which he belongs. Sailors in particular are, by virtue of their profession, which requires them to move from country to country and affords the opportunity to observe different types of nature and humanity, peculiarly well placed for receiving into their own natures the foreign influences which may be wanted to supplement their characters and to impart out of their own characteristics the qualities which the stranger may possibly need. A sailor is, or ought to be, freer from local prejudice and patriotic arrogance and conceit than others. He has an opportunity of see abroad just those particular excellences which at home he sees not, as well as those particular defects which at home are not so obvious; and, in his small way, he can give and take, establish a sort of intellectual and moral exchange which may greatly benefit the bargainers on both sides. As the best part of our knowledge comes to us, not through books, valuable as these are in their way, but through experience, through observing eyes and ears, impressibility and mental openness; and as one great source of ignorance and dulness is to be found in monotony of life, in narrowness of sphere and want of needful change, a sailor may congratulate himself that his lot, whatever may be its drawbacks, has generally the blessing of variety. But as no man can bring back from a foreign land anything of value, unless he has previously taken something of value into it, Jack must begin his self-improvement at home, and freight his mind in his own port. The foreign political relations of all countries are very much influenced by the culture, the mental and moral condition of the common people of all countries in their commercial or social intercourse one with another. Ambassadors and diplomatists may be polite and courteous, and interchange the civilities of their respective Courts, but, unless there be good feeling and honourable intention from the masses in one country towards the masses in another, all diplomacy will ultimately prove futile. The habits and practices of the merchant in his foreign trade and the manners of the tourist in his travels add to, or diminish, the difficulties of the Minister in Downing Street. He has to deal with predilections in favour of his country or with prejudices against it; he cannot create by mere treaties and correspondence an entirely new feeling. It is possible for a crew of drunken, noisy, coarse, dissipated sailors rioting through the streets of a foreign port to make the very name of England to be detested there. It is possible, on the other hand, for a crew of decent, orderly, intelligent, kind-hearted fellows to cause it to be respected and loved. In any foreign land which a ship visits the sailor brings a message, friendly or unfriendly, from over the sea and bears one away; he is a member of the British Embassy, unattached, unrecognised in official quarters, too obscure to be known among great people, but not without influence and power among the little people who at all times make up the great majo-

rity of the world. Let the sailor be taught to love his country and be proud of it, but not proud of its faults, its arrogance, its assumption of superiority, its prejudices, and sluggish sympathies. Let him not go about boasting that Britannia rules the waves with any exclusive or Neptune-like authority, for Britannia has no more power over the waves than what belongs to all people of all lands who have energy, intelligence, patient discipline, courage, and skill. Let him, instead of boasting abroad about our institutions, endeavour, in his small way, by vote and example, to improve them at home. Let him strive to form intelligent opinions on the great questions of the day, and not to take them on trust and second hand from pot-house orators or those bland gentlemen of the hustings and platform who, to gratify their own vanity or ambition, would beguile, flatter, mystify, and, as far as they dare, bribe and corrupt the constituencies to which they appeal. Let him beware of that class legislation which addresses itself for support, not to the public as a whole, but to petty sections of it, giving a sop to this "interest" to-day, and another sop to a different "interest" to-morrow, as if society were necessarily heterogeneous in its fragments and without a common tie. Let him in his humble advocacy of State measures insist upon gradually increasing freedom, freedom from meddlesome interference of legislation in matters that can be better trusted to the spontaneous judgment and intelligence of men, freedom from ecclesiastical interference with religious opinions and worship, freedom from the tyranny and dictation of mob and clique rule, whether it be assumed by a herd of bestial roughs in Hyde Park or a meeting of noblemen and gentlemen in some Conservative club devising polite methods to bribe or coerce a constituency. Above all, let him try by culture, by thought, by ethical discipline and self-denial to bring his spiritual nature into ascendency, to keep the appetites and passions subordinate, and to attain the freedom of a good heart and an enlightened mind. There are certain traits of our national life, political and social, of which, as Englishmen, we ought rather to be ashamed than proud; and it behoves every one of us to consider how far we have been contributors to the general sin. That inquiry will probably lead us to see more clearly the connection and dependence between personal self-improvement and public improvement, between the amendment of our private lives and the better condition of our national affairs. Sailors, ships, and the electric telegraph are the agencies by which we transmit our literature, our politics, our thoughts and feelings to other lands, and they transmit theirs in return. There are some calm, elevated minds everywhere watching the interchange and noting anxiously whether we rise or fall. Sometimes they must feel hopeful and glad, sometimes despondent and sorrowful. How sad it must have been ages ago to feeling observers in ancient Greece during the Macedonian and the Roman periods to note

that improvement had stopped and that the beautiful country was on the decline; how sad to observe that magnificent genius for art in process of decay; how melancholy to watch those matchless forms of physical beauty gradually degenerating in type and losing, little by little, their gracefulness and beauty; how sad to see Athenian talents desecrated at Rome and made to minister to sensual and selfish luxury! And among the Romans, too, how sorrowful it must have been to the more reflective of them during the period of their decay to observe that, amidst all the splendours of Empire, there was no solidity, no vigour of the moral sentiments, no healthy simplicity, no purity of private life, no high purpose in the public aims. All was tending to rottenness, and the terrible Goth became the Providential agent to sweep it away. All this came of the common error of mistaking glitter for gold, of thinking that the splendours of the State and Throne were of more importance than well-being, happiness, purity of life and habit among individual men. We hope, when our ships go abroad with files of newspapers, boxes of books, works of art, and packages of various products of our industry, that there will be a happier revealing to the foreigner of the tendencies of our English nation. We hope there will be evidence of progress of the highest kind, and that every common sailor will be happy in the consciousness that he bears beneath the hatches of his vessel, as also in the brighter thinking of his mind, in the more generous feelings of his heart, in the bettered tone of his manners, in the greater purity of his habits and tastes, the evidence of unceasing improvement in his native land.

E. A.

THE MADRAS CYCLONE OF MAY 2ND, 1872.

A PAPER BY CAPTAIN H. TOYNBEE, F.R.A.S., MARINE SUPERINTENDENT OF THE METEOROLOGICAL OFFICE.

(Reprinted from the *Quarterly Journal of the Meteorological Society*, by the express permission of the Council.)

THIS paper is accompanied by extracts from the logs of H.M.S. *Orontes*, the *Inverness*, and the S.S. *Durley*, sent into the Meteorological Office, containing data during the time of the Madras hurricane, in May, 1872. They are given at the end of the paper.

The wind and weather experienced by another ship, the *Ardgowan*, Captain Alexander Kerr, on the noons of May 1st and 2nd, are also given; she was about 600 miles S.E. of Madras, but had dark, gloomy weather, with hard squalls.

All observations have been corrected for instrumental errors, and the readings of barometers are reduced to 32° F. The direction of the

wind is true. Ships in port are not expected to observe for the office, so that the barometer observations supplied by Captains Donkin and Lunham are those incidentally taken on account of the exceptional weather, and have no attached thermometer-readings. Both these gentlemen are excellent observers, and have kept very complete sea-logs. In this case, the temperature at the Madras Observatory has been used to correct their barometer-readings.

In the Plate a reduction is given of the curve of barometric pressure, and records of direction and speed of the wind, &c., at Madras, drawn by N. Everard Pogson, Esq., Assistant Government Astronomer, Madras. By comparing it with the observations taken by Captain Donkin, whose ship, the *Inverness*, was at anchor in the Madras Roads, we find a close agreement in their barometer readings.

Their directions of wind agree fairly; but its veering from N.E. towards the E. and S.E., seems to have commenced about 9 a.m. of the 2nd at the Observatory, and about 11 a.m. at the ship. The changes in the force of the wind seem to have come about the same time with both ship and Observatory, and the heaviest blow in each case took place between 8 and 9 a.m. of the 2nd, when the barometer was at its lowest. But the Observatory never records a greater speed for the wind than 53 miles, and that only for one hour; this is supposed to represent from 8 to 9 of Beaufort's scale, while the ship records 12 of that scale, which is supposed to equal a speed of about 80 miles an hour. This difference may be partly accounted for by the fact that the curve from the Observatory only records the mean speed for a whole hour, whilst Captain Donkin's opinion would be influenced by the force of the gusts.

After studying these preliminary remarks, Plate from the Madras Observatory, and the extracts from the logs, the reader will do well to turn to Diagram 1 (p. 554), where he will find a map of India, and the Bay of Bengal, on which the following data are plotted for noon of May 1st.

May 1st, noon.

Ship *Inverness*, Madras Roads. Wind, N.E. 7. Barometer, 29·57 in.

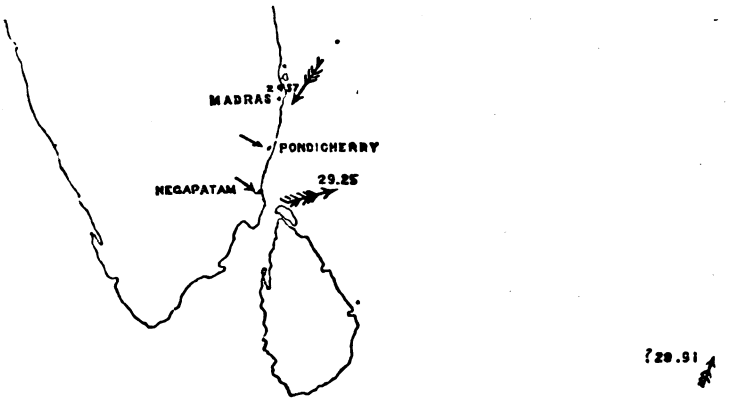
The Madras Observatory gives wind N.E. by N.; speed, 22 miles an hour. Barometer, 29·615 in. Temperature, 83°·6 F.

H.M.S. *Orontes*, lat. 10° 12′ N., long. 81° 19′ E. Wind, W. by S. 11. Aneroid barometer, 29·25 in.

It will be seen by a note attached to the log of the *Orontes* (which was most carefully kept by W. W. Vine, Esq., navigating lieutenant, that the aneroid fell to about 28·85 in., and remained so for about two hours, though it "pumped" more than a tenth of an inch; this must, I suppose, have been between 7 and 9 a.m. of the 1st.

Ship *Ardgowan*, lat. 7° 59′ N., long. 89° 2′ E. Wind, S. by W. 5. Barometer, 29·91.* "Gloomy weather, with hard squalls."

Diagram 1.



With this diagram before us, and considering the cyclonic theory of hurricanes, it will be seen that the centre of this one had just passed to the northward of the *Orontes*, having a westerly, or, probably, north-westerly route; for the wind had changed from N.W. to W. by S.; and if the lowest pressure be a sufficient guide, it was much closer to her at 8 a.m. of the 1st, than it was to Madras at 8 a.m. of the 2nd; for the *Inverness's* lowest pressure was then 29·266 in., whilst the *Orontes's* mercurial barometer was 28·87 in. at 8 a.m. of the 1st.

The *Ardgowan*, being at a great distance to the south-eastward, was experiencing the south-westerly wind, which would be expected to remain with a ship which had an area of low pressure passing away to the north-westward of her. This same south-westerly wind continued with the *Orontes* until she got into Trincomalee on the 3rd, and in that port on the 4th.

I will now get the reader to turn to Diagram 2, on which are plotted the following data for noon of May 2nd.

May 2nd, Noon.

Ship *Inverness*. Madras Roads. Wind, E.N.E., 11. Barometer, 29·883 in.

* The reading of this barometer is doubtful.

The Madras Observatory gives the following observations:—Wind, S.E.; speed, 36 miles an hour. Barometer, 29·378 in. Temperature, about 80°·5 F.*

H.M.S. *Orontes*, lat. 9° 30′ N., long. 81° 46′ E. Wind, S.W., 4 to 6. Aneroid Barometer, 29·670 in.

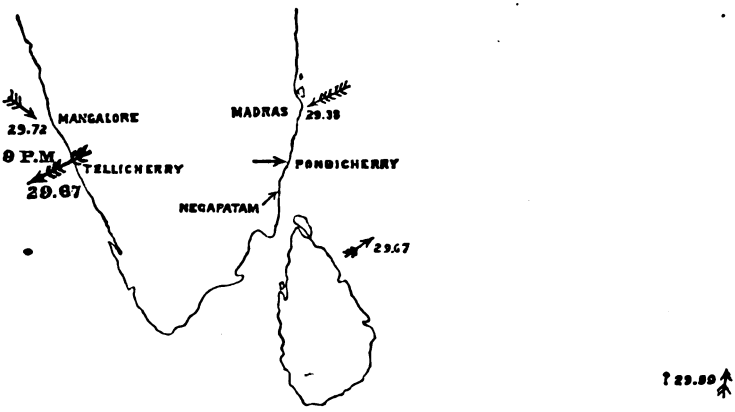
Ship *Ardgowan*, lat. 7° 14′ N., long. 90° 16′ E. Wind, S., 3. Barometer, 29·990 in.† Weather fine.

May 2nd, 11.30 A.M.

S.S. *Durley*, leaving Mangalore, lat. 12° 52′ N., long. 74° 49′ E. Wind, W.N.W., 6. Barometer, 29·721 in.

This ship, leaving Mangalore at 11.30 a.m. of the 2nd, had a fresh W.N.W. wind, and dirty weather; but she got the worst wind and weather off Tellicherry, lat. 11° 45′ N., long. 75° 28′ E., about 8 to 9 p.m., when it was N.E., 11, for about an hour, with almost incessant forked lightning, thunder, and very heavy rain. The wind then backed round from N.E. to N., N.W. and W., reaching S.W. by 2 a.m. of the 3rd. (See extract from log.)

Diagram 2.



From the data of May 1st, we find that the area of lowest pressure, or centre of the cyclone, was nearest to H.M.S. *Orontes* about 8 a.m., of the 1st, and that it passed to the northward of that ship, or the wind would not have backed from N.W. to W. and S.W.

* We have already remarked that the lowest pressure at the Observatory was at 8 a.m. The following are the records for that hour:—Wind, N.E.; speed, 53 miles an hour. Barometer, 29·287 in. Temperature about 76° F.

At the same time (8 a.m.) the *Inverness* had wind N.E. 12. Barometer, 29·266 in.

† The reading of this barometer is uncertain.

From the data of May 2nd we learn that the area of lowest pressure was nearest to Madras about 8 a.m. of that day, and that it passed to the southward of that port, or the wind would not have veered from N.E. to E. and S.E.

We also know that H.M.S. *Orontes* experienced the lowest barometer; hence we may conclude that the centre passed nearer to her than it did to Madras.

The changes of wind with the s.s. *Durley*, near Tellicherry, were very irregular, as might be expected, when we consider that a cyclone was probably passing or expending itself on the eastern side of the mountains forming the Western Ghauts. It will be noticed that the worst weather off Tellicherry took place about 12 hours after the lowest pressure passed Madras.

From the above scanty number of facts it seems fair to conclude that the centre of this cyclone passed to the westward, and probably to the north-westward, between the parallels of 10° and 13° N.; that its route was probably much interfered with by the high land to the W. and S.W. of Madras; but that it caused very disturbed weather on the west coast of India.

A careful consideration of the Plate by the Assistant Astronomer at Madras, leads to the conclusion that the first decided indication of the approach of the cyclone to that port took place *after* 10 p.m. of May 1st, at which hour the barometer had risen more than 0·04 in. since 4 p.m., the result of diurnal range. From 10 p.m., on the 1st, to 8 a.m., on the 2nd, it fell nearly three-tenths, *i.e.*, from 29·583 in. to 29·287 in., and no diurnal range was shown between these hours.

When we consider that ships leaving Madras Roads, with a north-easterly wind and high sea, must stand to the south-eastward, and make much leeway, it is manifest that had they done so at 10 p.m. of the 1st, they would have gone towards the centre of the cyclone, got the wind stronger, and more and more easterly, making the coast a dead lee-shore; so that the remark of Captain Donkin, of the *Inverness*, which ship rode out the cyclone, seems to be fully borne out—viz.: "Had the ships slipped their cables at midnight of the 1st, they would have anticipated their fate."

Since writing the above, the Report of the Astronomer of Madras, published in the *Nautical Magazine* for September, 1872, has been brought to my notice; and a paper on the same subject by the First Assistant-Master Attendant at Madras has been sent into this Office.

I do not see anything in either to lead me to change the opinion already expressed. If, as the Astronomer says, the cyclone first travelled N. by W., and then W., of which there is no proof in his report, captains of ships could not be expected to know beforehand that it was going to take

this erratic course; and even if it did, and they had known its intention, one cannot see how they were to hope to be able to run to the southward between it and the land. It is manifest that, with a north-easterly wind drawing to the eastward, no ship from Madras could have passed to the eastward of the cyclone.

The second paper alluded to supports the opinions I have ventured to express. From it I learn that on May 1st the wind was north-westerly, at Pondicherry, in lat. 11° 56′ N., long. 79° 49′ E., and also at Negapatam, in lat. 10° 46′ N., long. 79° 51′ E.; whilst on the 2nd it was westerly at Pondicherry, and south-westerly at Negapatam; the exact hours and force are not given, though, no doubt, it was blowing hard. These winds are represented on Diagrams 1 and 2.

This paper makes out that the cyclone travelled first westerly, in about 10° N., and then about N.W. by N., until its centre struck the coast at Sadras, a point about midway between Madras and Pondicherry, where, unfortunately, no observations were taken.

It remarks on the fact that telegraphic communication from the coast was unfortunately broken, so that the Master-Attendant had not the advantage of knowing what was going on elsewhere. This was certainly most unfortunate; but the paper seems quite to agree in supposing that the most perfect information would not have justified sending the ships to sea from the Madras Roads.

It states that ships which went to sea from Pondicherry and Negapatam were dismasted or lost, whilst those which remained at anchor rode out the gale; also that the one ship which did put to sea from Madras has never been heard of since; and that as she was driven directly towards the centre of the cyclone, it is most probable that she foundered in it.

Considering that ships in port are very rarely in a fit state for going to sea (the very fact of their being engaged in discharging or taking in cargo proving that they cannot be in trim), great judgment should be exercised in ordering them to "slip and run."

It is well known that Madras does not deserve the name of a port, and that it is not a fit place for ships to take in and discharge cargo during the hurricane months; still, if it is decided to have ships there at those times, they ought, when signs of a cyclone appear, to shift to the outer anchorage, where there is good holding-ground in blue mud, and a truer sea than there is near the shore.

No doubt the *Inverness* and *Bonnie Dundee* rode out the gale in consequence of their being in this favourable position.

During the night of the 21st of October, 1864, a fortnight after the great Calcutta cyclone, I rode out a similar one to the eastward of the entrance of the Hoogly: we anchored in 18 fathoms blue mud, and

From the data of May 2nd we learn that the area of lowest pressure was nearest to Madras about 8 a.m. of that day, and that it passed to the southward of that port, or the wind would not have veered from N.E. to E. and S.E.

We also know that H.M.S. *Orontes* experienced the lowest barometer; hence we may conclude that the centre passed nearer to her than it did to Madras.

The changes of wind with the s.s. *Durley*, near Tellicherry, were very irregular, as might be expected, when we consider that a cyclone was probably passing or expending itself on the eastern side of the mountains forming the Western Ghauts. It will be noticed that the worst weather off Tellicherry took place about 12 hours after the lowest pressure passed Madras.

From the above scanty number of facts it seems fair to conclude that the centre of this cyclone passed to the westward, and probably to the north-westward, between the parallels of 10° and 13° N.; that its route was probably much interfered with by the high land to the W. and S.W. of Madras; but that it caused very disturbed weather on the west coast of India.

A careful consideration of the Plate by the Assistant Astronomer at Madras, leads to the conclusion that the first decided indication of the approach of the cyclone to that port took place *after* 10 p.m. of May 1st, at which hour the barometer had risen more than 0·04 in. since 4 p.m., the result of diurnal range. From 10 p.m., on the 1st, to 8 a.m., on the 2nd, it fell nearly three-tenths, *i.e.*, from 29·583 in. to 29·287 in., and no diurnal range was shown between these hours.

When we consider that ships leaving Madras Roads, with a north-easterly wind and high sea, must stand to the south-eastward, and make much leeway, it is manifest that had they done so at 10 p.m. of the 1st, they would have gone towards the centre of the cyclone, got the wind stronger, and more and more easterly, making the coast a dead lee-shore; so that the remark of Captain Donkin, of the *Inverness*, which ship rode out the cyclone, seems to be fully borne out—viz.: "Had the ships slipped their cables at midnight of the 1st, they would have anticipated their fate."

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gave the ship a whole cable before the gale came on: the force of the wind was so great that the top-gallant-masts, with no yards on them, were blown away without my knowing it (though I stood on deck at the time), until a flash of lightning showed me that they were gone. This was in the same *Hotspur* which was lost in the Madras cyclone—a fate which I venture to think she would have escaped had she been anchored further from the shore.

It is, however, due to Captains that it should be known that ships *must* go near the shore in Madras, if they wish to communicate, for boats wil not take cargo, &c., to them, at the distance of the *Inverness* and *Bonnie Dundee*. The former had taken her position for throwing out ballast, which is not permitted nearer to the shore; and the latter was not in the port at all.

The conclusion one arrives at is, that when there are signs of a cyclone in Madras, each ship should be requested to take up a clear berth in 10 or more fathoms, to veer a good scope of cable before the wind freshens to a gale, and to devote all spare time to making snug, and preparing to put to sea, if thought best. Any ship preferring to go to sea *at once* might, of course, do so.

A few words on the cause of this and other cyclones may not be out of place here.

From noon of the 29th April (Plate) Madras had been experiencing north-easterly winds; whilst, during the same time, the *Ardyowan*, in about lat. 9° N., and long. 87° E., had strong and squally southerly winds; now, as Buys Ballot's law requires that an area of low pressure must have existed between these two winds, into which they were blowing spirally, there can be little doubt that this was the breeding-place of the cyclone, and that the collision between these counter-currents of air caused the eddy, or cyclone, which was formed at their point of contact.

This same meeting of two currents of air seems to account for the north-easterly winter snow-storms of America, which are in close contact with, and form part of, cyclonic movements, having southerly winds on their eastern sides. (See Official No. 13, published by the Meteorological Office.)

It seems also worthy of notice that our researches into the weather of the Equatorial Doldrums in the North Atlantic show that, at the time of year when West India hurricanes take place, an area of high atmospheric pressure has pressed its way across the Equator, as far as lat. 10° or 12° N.; it is also known that at the same time there is another and higher pressure in about lat. 30° N.; between these is an area of low pressure into which a south-westerly wind is blowing from the southern high pressure, and a north-easterly wind from the northern; also, the

sun going to the southward, is drawing the whole system of wind to the southward, so that where south-westerly winds were blowing, north-easterly winds are coming; and there can be little doubt that the collision between these two counter winds, in such close contact, causes the eddies which are the commencements of our West India hurricanes. Mr. Meldrum finds a similar cause for the Mauritius hurricanes.

I am sorry this paper is not more complete; but the subject is so important that it seems right to call public attention to all available data, even though it is only fragmentary.

H.M.S. *Orontes*, Captain J. L. Perry, R. N., from Penang to Negapatam.

1872.		Wind.		Barometer corrected.	Thermometer.		Weather.	Remarks.
Month and Day	Hour.	Direction.	Force.		Dry.	Damp.		
				in.	°	°		
April 30	8	N.W.	3-5	29·582	80·1	79·0	c. q. r.	8 30 A.M. Anchored 2¼ miles off Negapatam lighthouse in 5½ fms. Increasing easterly sea. No communication with the shore. A queer moaning sound in the wind with heavy gusts at times.
	10	N.	2-4	29·591	79·6	79·0	c. q. r. l.	
	Noon	N. by W.	2-4	29·557	78·6	78·0	c. q. r. l. t.	
	2	N. by W.	4-5	29·547	78·6	78·0	c. q. r.	2.12 P.M. Wind and swell increasing; shifted berth to 11¼ fms., weather looking very bad, small vessels going to sea.
	4	N. by W.	5-6	29·547	78·6	78·0	c. q. r.	
	6	N.W.	4-6	29·496	77·2	77·1	c. q. r.	
	8	N.W.	7-8	29·532	78·1	78·0	c. q. r.	5.20. Proceeded to sea. Course E. N. E.
	10	N.W. by N.	8-7	29·509	78·1	78·0	c. q. l. r.	
	Midnight	N.N.W.	6-8	29·445	79·1	78·5	c. q. r.	10. Heavy sea from eastward
May 1...	2	N.	6-8	29·150	78·7	78·6	c. q. r. l.	4. A.M. Hove to with easy steam under main and mizen trysails.
	4	N.	8-10	29·056	78·6	78·5	c. q. r. l.	7.50. Sea washed away jollyboat from the sterm
	6	N.	8-10	28·900	78·1	78·0	c. q. r. l.	
	8	N.W.	in	28·870	78·1	78·0	c. q. r. l.	11. Sea and wind took jib from the bowsprit.
	10	W.N.W.	sud'n	*29·15	78·1	78·0	c. q. r. l	Noon, position 10° 12′ N., 81° 19′ E. Sea very heavy and broken, but not so destructive as the N. Atlantic sea.
	Noon	W. by S.	gusts	29·25	78·1	78·0	c. q. r. l.	
	2	W. by S.	10-11	29·28			c. q. r.	2. P.M. Wore ship.
	4	W. by S.	10-11	29·26	No use,		c. q. r.	5.15. Carried away main trysail mast. Hove to *without steam* under mizen trysail, and main trysail laced to main mast.
	6	W.S.W.	10-11	29·35	bulbs		c. q. r.	
	8	W.S.W.	10	29·35	at	constantly	c. q. r.	
	10	S.W.	8	29·45	wet.		c. q. r. l.	
	Midnight	S.W.	9	29·46			c. q.	
May 2...	2	S.W.	9-7	29·45			c. q.	2 A.M. Heavy sea from sth.-westward.
	4	S.W.	7-8	29·47			c. q.	
	6	S.W. by S.	5-6	29·51	79·1	77·0	b. c. q.	Noon, position 9° 30′ N., 81° 46′ E.
	8	S.W. by S.	6	29·57	80·9	78·0	b. c. q.	Communicated with a barque, having her mizen and part of her fore-mast standing, she did not require assistance.
	10	S.S.W.	4	29·60	79·1	79·0	b. c. q. p.	
	Noon	S.W.	4-6	29·67	82·6	81·0	c. q. p.	

* The aneroid barometer went down as low as 28·85 and remained for two hours. All subsequent readings are from the aneroid which was adjusted to the mercurial barometer before the gale.

Ship *Inverness*, Captain Thomas Donkin, R.N.R., anchored in Madras Roads.

1872.		Wind.		Barometer corrected.	Remarks.
Month and Day	Hour.	Direction	Force.		
				in.	
May 1...	Noon	N.ely.	6 to	29·567	Noon. Observed signal at the Master Attendant's Office—"Surf impassable." 4 P.M. Set sea-watch. Towards evening squally weather, heavy showers, wind coming in gusts. Veered to 90 fathoms.
	4	N.ely.	7	29·577	8 P.M. Secured everything about the decks, &c., for bad weather. Close reefed topsails, foresail, and lower staysails ready for setting. Midnight, heavy squalls and heavy rain.
	Midnight	N.ely.	8	29·527	
May 2...	2	N.E.	9	29·436	Daylight, very heavy squalls and very threatening appearance; waited for a lull and paid out to 130 fathoms of chain, letting go second anchor before doing so, and veering to 35 fathoms.
	4	N.E.	10	29·375	
	4.15	N.E.	11	29·343	About 5.30 A.M. observed the *Burlington* drifting, about 7 A.M. the *Ardbeg* drifting. 9 & 10 A.M. *Sir Robert Sepping* dragging. *Invershia*, *Hotspur*, *Kingdom of Belgium*, *Armenian*, *Mary Scott*, and other country ships parted. At 11 A.M. the wind began to veer easterly, and knowing then that the centre was passing south (though very close) felt convinced that if the chain only held on another hour we should be safe. The ship did not drag at all; we were prepared to cut away should she have commenced. During the morning the sea was fearfully heavy, and now and then the head of a sea came on board, but no large body of water.
	8	N.E.	11·5	29·266	
	9	N.E.	12	29·267	
	9.30	N.E.	12	29·285	
	10	N.E.	11·5	29·306	
	10.30	N.E.	11	29·319	
	11	N.E. by E.	11	29·331	
	Noon	E.N.E.	10·5	29·383	
	1	E. by N.	10·5	29·413	I consider that neither the appearance of the weather nor the indications of the barometer, before midnight on Wednesday the 1st, gave warning of a cyclone, and that had the ships slipped their cables then, they would have anticipated their fate.
	2	E.	9	29·446	
	2.30	E. by S.	9	29·453	
	3	S.E.	8	29·467	
	3.30	S.E. by S.	8	29·470	
	4	S.S.E.	7	29·481	
	4.30	S. by E.	7	29·501	
	5	S. by E.	6·5	29·541	
	6	S. by E.	6·5	29·548	
	7	S. by E.	6·5	29·550	
	8	sly.	6	29·618	Wind decreasing to a light air towards morning of 3rd.

S.S. *Durley*, Captain R. D. Lunham, bound from Bombay to Tellicherry.

May 1st. Noon. Barometer steadily falling; swell increasing and weather looking very unsettled.

May 2nd. 11.30 a.m. Left Mangalore Roads, bound for Tellicherry. Steamed down the coast with fresh W.N.W. breeze, and considerable sea. Barometer 29·721 in. still falling; dark, heavy masses of cloud working up from westward, and passing over, with slight increase of wind occasionally.

7 p.m. About seven miles W.N.W. of Tellicherry, barometer 29·684 in. Dark threatening appearance rapidly increasing all round, and heavy rain beginning to fall.

7.30 p.m. After a short lull of ten minutes, the wind sprung up again from N.W., and veered rapidly round by N. and E., making a complete circuit of the compass in about 15 or 20 minutes; arriving again at

N.W., it remained steady at that point for a few minutes, and then shifted suddenly and violently to N.E., blowing with intense fury for one hour—force 11, remaining tolerably steady at the same point, and accompanied all the time by very heavy rain and almost incessant forked lightning and thunder. The darkness, also, was intense, increased, doubtless, in appearance by the vividness of the lightning, and the luminous appearance of the sea. The electric current appeared to come up from the westward, and pass immediately over the ship in the direction of the high land, at rather more than a right angle from the direction of the wind, then taking a south-easterly direction, as if, when reaching the Ghauts, it had passed down parallel to them.

At 8 p.m., the ship's head had been put round to S.W., before the wind, and steamed off the land—barometer 29·664 in. Soon after this it began slowly to rise; at 9.30 p.m. it was 29·674 in., at midnight 29·705 in. 9 p.m., the wind and rain began to decrease, backing round to N., N.W., and, finally, at 2 a.m. on the morning of the 3rd, it reached S.W. 10.30 a.m., 3rd, anchored in Tellicherry Roads.

Up to and including the evening of the 4th of May, the weather continued very unsettled and threatening, occasional sharp squalls of wind and rain about sunset and sunrise, and very heavy surf on the beach.

THE DOMINION BOARD OF TRADE.—THE CRIMPING SYSTEM.

The following is the paper on the above subject which Mr. Henry Fry, President of the Dominion Board of Trade, read at the meeting:—

"Mr. Fry asked the Board to consider what means should be adopted to prevent the desertion of seamen, and what stricter measures should be enforced for the shipping of seamen through the proper officer. He said the desertion of seamen, in Quebec, and the terrible evils resulting therefrom, are very old complaints. The crimps continue to ply their demoralising traffic almost with impunity, and it will be remembered that, during last summer, a Danish sailor, who refused to desert, was murdered on board his own ship by one of these ruffians. The murderer has never been caught, and so the lesson is not likely to have much effect upon his *confrères*. Shortly afterwards a crimp met his death from an exasperated captain, who got into a scuffle in endeavouring to prevent one of his crew from deserting. These melancholy occurrences have served to bring the question once more before the public mind, and are sufficient excuse for inviting the action of this Board. It is hardly

necessary to describe the evils of the horrid system. Whilst at sea the law lays its heavy hand upon the sailor, and by night and by day, almost without intermission, he is subject to the severest discipline. Any disobedience of a master's lawful commands is met with heavy punishment, and to conspire to resist his authority is mutiny. Hence, on his arrival in Quebec, Jack longs for a little unbending—a 'night's spree,' as he calls it. He is decoyed ashore, poisoned with drugged liquor, and kept in close confinement, until he dares not return. Once in the power of the crimp he is helpless, and has to submit to his master's behests. He is hustled on board another ship, often in a state of stupefaction, after having gone through the farce of signing articles at the shipping office; the crimp dictates the rate of wages, often ten, twelve, and sometimes fifteen pounds sterling per month. One-half of this sum is handed over to the crimp, and Jack is dismissed, with curses on his lips, often to meet with further punishment at sea, through his unfitness for duty, as a result of the bad whiskey and other compounds he has imbibed ashore. Often, however, the sailor refuses to desert. His clothes are then stolen, or he is forcibly taken out of the ship. Should he resist, the revolver is brought into play, and often used. Even the captains and officers of ships are frequently overawed and compelled to witness the desertion of their crews. The system results in a heavy tax upon the trade, and, of course, affects the rates of freight. When seamen desert, labourers have to be employed, in their stead, at four times their wages. The wages homewards are usually treble those paid in England. The very large sums amassed by the crimps are paid by the shipowners, who, in turn, get them back from the producer or consumer of the lumber. But the evil sometimes shows itself in another form. In consequence of the rates of wages, ships often leave Quebec short handed, and many a wreck, I doubt not, could be traced to this cause. It must be admitted that our Governments have never earnestly and sincerely tried to put down the system. When the attention of Sir E. B. Head was called to it, in 1855, he doubted the truth of the statements made, and appointed a commissioner to take evidence. The evidence fully confirmed the truth of the representations made. It was printed as a Parliamentary paper, and allowed to end there. When Sir George Cartier was pressed by a deputation from the Quebec Board of Trade, in 1861, to take steps towards putting it down, he declined, giving it as his opinion that crimping was simply a dispute between shipbuilders and shipowners, which they ought to arrange. It has often been stated that shipbuilding is the real source of desertion, because the new ships make the demand for seamen greater than the supply. This is only partially true; in fact, recent experience has shown that crimping flourishes just as well when there are no new ships fitting out, as it did formerly, when they were

numerous. The truth is, that the first batch of men which desert, creates a vacuum which has to be filled by stealing sailors from other ships, and so the ball is kept rolling until the close of navigation. The captains, being only visitors, almost unknown to each other, never combine to resist the demands of the crimps, and are only too glad to get out of a place where they feel they have been plundered. It is stated that some captains not only wink at desertion, but bargain with the crimps, and receive money for permitting the seamen to desert. These men should be severely punished; but I believe such cases to be very rare. The force of police employed by the Government and paid by shipowners is ridiculously small. In a harbour, ten miles long and nearly a mile wide, where there may sometimes be seen 250 or 300 ships, not at wharves, but at booms or blocks, or riding at anchor, in a strong tideway, just twenty-five men, constitute the whole force. The result is, that the law has no terrors for the crimp. Most of them make large incomes; they keep out of sight, and if their runners happen to be caught once, now and then, they can afford to retain the best legal advice, and to pay the very moderate fines imposed. Is it not, however, a disgrace to our civilisation that a handful of lawless men should so long have defied the laws, levied a heavy tax upon a most important trade, demoralized a hardworking and deserving class of their fellow-men, and made the very name of Quebec a by-word throughout the world? Can the Government put an end to it? I say yes, if they are in earnest. If I could only succeed in waking up the Government to a sense of the importance of the matter, I am satisfied the energetic Minister of Marine would soon find a remedy. The fact is that to meet a case of this kind the ordinary powers of law are of no avail. When Lord Brougham induced Parliament to treat the slave-trade as piracy, it was put down, but not before; and something analogous will have to be done before this terrible curse is eradicated. Severe measures must be taken, and a little wholesome despotism exercised if necessary, in dealing with men who obey no law, and hesitate at no crime in the accomplishment of their nefarious ends. As for the British Government, they have succeeded in putting down crimping to a great extent in their own leading ports, and I have good reason to know that they will cheerfully co-operate with our Government in concerting necessary measures to put it down throughout Canada. Already they have provided by law, that all wages due to any sailor who is proved to have deserted shall be forfeited, and may be handed over to the shipowner who has suffered by his desertion. The Imperial Board of Trade and its officers are unceasing in their efforts to punish crimping, and to raise the character of British seamen, and they will hail any efforts on our part in the same direction. I am sometimes told that the

true remedy is to pay off all sailors on their arrival in Quebec, in which case the supply would exceed the demand, and crimping die out. But this is impracticable, for two reasons:—First, the British Government would not permit it; and, secondly, the fleet could not be manned on such conditions, because respectable sailors will not leave England without providing for the support of their families by means of half pay, which the shipowners could not grant if the men were paid off on arrival at Quebec. If it were practicable, however, I believe it would only make matters worse. The profits of the crimps would be vastly increased, and the demoralisation of the sailors complete. I trust the Government will at once take the matter up in earnest, and be successful in removing a long standing and crying evil."

He then moved, seconded by Mr. Dobell—"That the crimping system, as carried on in Quebec, is a scandal and a disgrace, not only to that city but to the whole Dominion, and that this Board memorialise the Dominion Government to take the most energetic measures for its suppression."

Mr. De Veber suggested that the Government should be asked to take measures for the suppression of crimping at all the leading ports of the Dominion.

The resolution was so amended and carried.

DESERTION.

It has often been made a complaint by owners and masters of vessels, calling at the "coal ports" to load up, that numerous desertions regularly and systematically took place there. Vessels shipping crews at London or Liverpool, intended for America, East or West Indies, &c., and were ordered to Newcastle, Sunderland, Cardiff, Newport, as the case might be, immediately on arrival, it was said, the seamen took "French leave." This was the allegation of the captain. On the other hand, it was as "loudly whispered" on the sailor's side, that this complaint was all "moonshine," and that as it saved the owner £2 to £3 a man for "run" money, it was cheaper to give "Jack" half a month's advance and let him quietly go. This view had taken so firm a hold of the public mind that masters of ships, who honestly wanted to carry out the contract, have found a difficulty in obtaining convictions for desertion. This was mainly owing to the magistrates adopting the idea that the first agreement, or, rather, the part of the agreement, signed at the *first* port, was only a sham. The subject had never been brought to the statistical test, until the quarter ended 31st March last, the Superintendent of Mercantile Marine at Cardiff arranged to procure some figures bearing on the

matter. It was ordered that the messenger attending each dock should, after seeing the outward vessels off, take account of those arriving, and which had existing agreements not terminable at Cardiff, but at some foreign port; then ascertain the number of crew on board of each; and before the vessel sailed again, note the number of deserters, and those whom the master refused to prosecute. The result is as follows:—

Ships	205
Number of men on board	8,510
,, deserters	140
Percentage of loss	8·90
Number prosecuted	9
,, ordered for prosecution, but could not be found	8
,, the masters refused to prosecute	123

The above return, of course, includes a number of steamers which have "running agreements," and trade regularly to and fro to France, from which not many desertions take place. Allowing for this, there does not seem, after all, to be much room for *very* loud complaint in a percentage loss of three to four in the hundred men, where so many temptations exist. But, supposing the theory be true, that numbers of the so-called deserters are not so in a *bonâ fide* sense, then the percentage is infinitesimal, being only ·48 per cent., or less than half a man in the hundred. For those only would be assumed to be deserters whom the masters are desirous of prosecuting, and that number was only 17 in a complement of 3,510.

Whatever view may be taken of this matter, it seems to us very plain that desertion can be effectually crushed out, if shipowners and shipmasters would only regularly exercise the power which the law has given them. The 248rd and 246th sections of the Merchant Shipping Act, 1854, give them full power to act in this matter. If they chose only to put the law in operation, once in eight times, they need not cry out that they have not sufficient help in this matter. Herein the old adage stands good: "Heaven helps them that help themselves."

As an addendum to these remarks, we append a return from the same port of the numbers shipped and failed to join during the same period:—

Number of men shipped	5,159
,, neglected to join	142
Percentage of loss	2·75
Number prosecuted	15
,, owners refused to prosecute	67
,, ran off and could not be found	60

The percentage loss is the same as that for years past, having never been above three, and never below two per cent. since the year 1866.

RULES OF THUMB FOR STEAMSHIP SPEED, POWER, AND COAL, IN THE MERCHANT SERVICE.

ALL readers of the *Nautical* are interested in the above items of steamship performance. It is proposed to give in the following paper a number of simple rules for the use of those who have not the time, or perhaps the training, for going deeper into the subject; and also to state some of the useful arithmetical contractions that reduce formidable calculations to a simple sum in mental arithmetic. These purely arithmetical rules are not new.

The speed of a steamer is the speed of the propeller, whether that be screw or paddle, less the slip. For the speed of the propeller we have the following rules:—

I. $\frac{\text{Revolutions per minute} \times \text{pitch in ft.}}{100}$ = knots per hour by screw.

II. $\frac{\text{Revolutions per minute} \times \text{pitch in ft.}}{88}$ = miles per hour by screw.

III. $\frac{\text{Revolutions per minute} \times \text{diameter in ft.}}{32}$ = knots per hour by paddles.

IV. $\frac{\text{Revolutions per minute} \times \text{diameter in ft.}}{28}$ = miles per hour by paddles.

In the first of these the knot is taken as 6,000 ft.—that is, it is reduced by about 80 ft.; the rule is only an approximation, but it is what is generally used by practical men. The second rule is quite correct; the third supposes about 50 ft. taken off the knot; and the fourth supposes about 14 in. cut off the statute mile. We give examples of these rules:—

1. A screw propeller makes 74 revolutions per minute, its pitch is 18 ft., what is the speed of the screw in knots and in miles per hour?

74	74
18	18
592	592
74	74
1332	8)1332
	11)1665
13·32 knots.	15·14 miles.

2. A screw propeller is 22 ft. pitch; how many revolutions per minute must it make for a speed of screw per hour of 14 knots, and for 14 miles?

```
22)1400(63·6
  132
  ---
   80
   66
  ---
  140
```

```
  14
  88
  --
 112
 112
 ---
22)1232(56
  110
  ---
  132
  132
```

Answer. 63·6 revolutions for 14 knots, or 56 revolutions for 14 miles.

3. A paddle wheel is 28 ft. diameter, from centre of float to centre of float; it makes 26 revolutions per minute; what is the speed of the floats in knots and in miles per hour?

```
  28
  26
  --
 168
  56
 ---
4)728
 ---
8)182
 ---
 22¾ knots
```

```
  28
  26
  --
 168
  56
 ---
4)728
 ---
7)182
 ---
 26 miles.
```

4. A paddle wheel is meant to make 36 revolutions per minute, what diameter must it be if the speed of the floats is to be 18 knots, and what if 18 miles per hour?

```
  18
  32
  --
  36
  54
 ---
36)576(16
  36
 ---
 216
 216
```

```
  18
  28
  --
 144
  36
 ---
36)504(14
  36
 ---
 144
 144
```

Answer. 16 ft. diameter for 18 knots per hour, and 14 ft. diameter for 18 miles per hour.

In the calculation for screw speed in knots, we had 100 as a divisor, but to multiply or to divide by 100, is only to add or cut off two decimal places. In some of the following rules we have similar divisors, but they may be practically neglected, and the decimal place always fixed by inspection. In the first example there could be no hesitation as to whether it was 1·33, or 13·3, or 133 knots that was meant; and so, in other cases, it is often convenient not to burden the mind with the exact number of cyphers there is in the divisor; and, although we have in every case given them, they need not be committed to memory.

The marine engines in general use may be divided into three classes: common engines, with jet condensation, working with steam at 25-pounds pressure, when new; common engines, with surface condensation and separate expansion valves, working with steam about 40-pounds pressure, when new; and compound engines, working with steam about 60-pounds pressure, when new. We will call these three classes—common engines, surface condensing engines, and compound engines in the following rules:—

Rule V. The square of the diameter, in inches, of one of a pair of surface condensing engines, divided by 100, is the average consumption in this class of engine in tons of coal per day. The consumption for compound engines is one-fifth less, and for common engines one-fifth more than the above; that is, multiply by ·8, or by 1·2, as the case may be.

For compound engines in this and all the following rules, reckon only the low pressure cylinders.

These are only "Rules of Thumb," and to introduce any factor for speed of piston, or other refinements, would alter their character, and defeat the object we have in view in publishing them. For very fast running pistons the consumption will, of course, be greater, and for every slow moving pistons the consumption will be less.

Rule VI. The total width, in feet, of all the furnaces will be about the same as the consumption in tons of coal per day.

5. A pair of engines, cylinders 30 in. in diameter, what is the consumption of coal per day?

$30 \times 30 = 900$, say 9 tons, if surface condensing.

Say $9 \times 1{\cdot}2 = 10{\cdot}8$ tons, if common engines.

Say $9 \times {\cdot}8 = 7{\cdot}2$ tons, if compound engines.

6. A pair of common engines, 56 in. cylinders, how many furnaces, each about 3 ft. wide, will there be in the boilers, and what will be about the consumption of coals per day?

$56 \times 56 = 3{\cdot}136 \div 100 = 31{\cdot}36$.

$31{\cdot}36 \times 12 = 37{\cdot}6$, say $37\frac{1}{2}$ tons per day.

And say 12 furnaces each, 3 ft. $1\frac{1}{2}$ in. wide.

In marine high pressure boilers the consumption is generally less than that given in Rule VI., and is even sometimes as little as 14 cwt. per foot of width for Welsh steam coal.

7. A compound engine, one high pressure cylinder, 88 in. diameter, and one low pressure cylinder, 62 in. diameter, what will be about the consumption of coal per day, and what number of furnaces, each about 8 ft. wide, will be suitable for the boiler?

Here we have only one engine, and as the rules are for a pair, we have to divide by 2, and we do not reckon the high pressure cylinder.

62	19·22
62	8
124	5)15·376 tons
872	3·07
2)3844	
1922	

Say 15¼ tons per day and 5 furnaces, each 8 ft. 1 in. wide.

Rule VII. For a maximum speed of 10 knots per hour, the diameter in inches of one of the cylinders of a pair of engines is about 1·4 times the beam of the vessel in feet. If there is only one engine, the diameter of its cylinder, in inches, is 2 times the beam of the vessel in feet.

Rule VIII. For any other maximum speed, multiply the above result by that other speed, and divide by 10.

This rule is not correct in principle, but as the speed is, generally, not far from 10 knots, and as for greater speeds the engines generally give proportionately greater power, this approximation is frequently not far from the truth. The above applies to either of the three classes of engines described above.

8. The beam of a steamer is 38 ft., the vessel steams 12 knots; about what diameter are the cylinders, a pair of engines?

88	53·2
1·4	12
152	10)63·84
88	63·84
53·2	

Say 64 in. diameter.

9. A steamer, 86 ft. beam, steams, at her maximum speed, 11 knots per hour; about what diameter are the cylinders, a set of compounds?

86 × 2 = 72

72 × 11 = 72 + 72 = 792

792 ÷ 10 = 79·2 inches

The low pressure cylinder will be about 79 in. diameter.

Rule IX. The square of the beam of a vessel in feet gives the tons of coals for a speed of 10 knots per hour for 40 days, 50 days, or 60 days, according as the engines are common, surface condensing, or compound. Welsh steam coal is meant.

Rule X. For other speeds multiply the square of the beam, in feet, by the cube of the speed in knots, and divide by 1,000 before dividing by 40, 50, or 60 for the consumption per day.

10. A steamer is 86 ft. beam, the engines are compound, what is her consumption for a speed of 10 knots per hour?

86 × 86 = 216 + 108 = 1296

1296 ÷ 60 = 21·6 tons.

11. A steamer has common engines, she steams 11 knots per hour, about what is her consumption per day—the beam is 40 ft.?

11 × 11 = 121 × 11 = 1331

40 × 40 = 1600

1·331 × 1600 = 1600 + 4800 + 4800 + 1600

212(9·600 ÷ 40 = 53·24 tons per day.

If with compound engines, this would have been—

212(9 ÷ 60 = 35·5 tons per day.

Rule XI. The length of a steamer multiplied by the square of the beam, both in feet, divided by from 100 to 120, gives about the displacement of the steamer when at her deep load line—say average 110.

The displacement, and indeed all the other results we have given, vary very much, even in vessels agreeing in the dimensions referred to by us. Our rule supposes that all we know of the vessel is her length and her beam, and although the result cannot be taken as accurate, the approximation is often useful.

12. A steamer is 41 ft. beam, 433 ft. long, about what displacement will she have?

41	1681
41	433
41	5043
164	5043
1681	6724
	11(0)72787(8

6617 tons.

Rule XII. The displacement by the cube of the speed in knots, divided by 12 times the length, is equal to the indicated horse-power.

The divisor 12 is about the average for a fair result, but it varies from 10, or even less, up to 14, and, according to some returns, even to 16. We doubt whether this high result has ever actually been obtained.

13. A steamer displaces 8,900 tons, she is 335 feet long, her speed is 9·75 knots. About what horse-power will she indicate?

$$8{,}900 \times 9{\cdot}75 \times 9{\cdot}75 \times 9{\cdot}75 = 8{,}614{,}500$$
$$335 \times 12 = \ldots \quad \ldots \quad \ldots \quad 4020 = 899.$$

Answer. 899 horse-power.

In concluding for the present our notice of these rules, we have to explain that our object is not so much to give rules that will give results in strict agreement with every example of steamship performance, as to give a shape to rules that can be modified by the reader, by altering the multiplier or divisor to be in accordance with his experience, and to give them in a form so simple that their application may be more an amusement than a tedious calculation.

We shall be glad to receive from any of our readers better values for any of the numbers we have given. The following is a list of worked out results, the data were sent in by a few friends, and indicate a great disparity between the performances of the different vessels. There is no doubt a difference in the manner of fixing the data; the steaming speed of a vessel is very different as given by different observers. Some will give the average speed upon the voyage involving the variable element

of the effect of the wind; while some will give the speed from a trial trip, as running between the Lights on the Clyde. The length by some will be given the registered length, by others the length at load water line. The consumption is always only roughly measured; some include the coal used for cooking and for steam winches in the propelling consumption, while others deduct that, and, if disposed to make a very economical performance, they will even knock off a percentage for defective weight in coals supplied abroad. But however these facts may cast doubt upon returns whose details cannot be verified, they may be all eliminated from any set of examples under one's own observation, which should all be taken in the same manner.

In the following heading B is the beam, to the speed in knots per hour, C is tons of coal per day, L is length of vessel as reported, some of them are the registered length, others the length on water line; H is the indicated horse-power. The displacement is given as reported to us, so that our friends may recognize their own vessels and explain any discrepancies they may see in this comparison. The higher the numbers the better are the results.

ALL WITH COMPOUND ENGINES.

Displacement.	$\frac{B^3.\ K^3.}{1{,}000.C}$ =	$\frac{D.K^3}{L.C.}$ =	$\frac{D.K^3}{L.H.}$ =
1,500	42·7	380	10·4
1,730	77·4	632	15·1
1,810	77·0	675	10·8
1,973	61·5	500	12·7
1,980	38·4	335	8·6
2,010	71·9	691	14·3
2,197	66·6	677	14·1
2,175	56·1	541	13·7
2,450	31·1	298	7·1
2,720	61·9	576	15·7
3,425	59·4	528	11·8
3,890	82·9	887	14·2
3,900	85·7	871	12·0
4,200	88·0	610	15·1
4,870	53·9	552	16·0
5,240	55·4	897	11·2
6,480	61·5	570	13·7
6,750	64·5	598	14·4
Instead of as by the Rules.	60·	546	12·

Looking over this table we observe that the first example has the first two co-efficients of performance very low. This points to the coals as likely to be the faulty item, for that affects these two co-efficients, probably the coals are inferior or the return is too high, or possibly the boilers are too small and the coals waste by forcing the fires, or the engines may be bad. The third co-efficient 10·4 is not so exceptionally low as the other two. All the co-efficients compare proportionately, 5 per cent. on one has the same value as 5 per cent. upon either one of the other two.

When the number in the second column is equal to ten times the number in the first the displacement is then just equal to $\frac{L.B^2}{100}$. A comparison of the two columns will show how this varies, in four examples this displacement is exceeded.

In the example 4,870, the displacement seems to us to be overstated, and hence the high value obtained for the third co-efficient, 16. The same remark seems to apply to displacement 2,720.

We recommend our readers not to be disappointed should these rules not apply closely to the examples they may try, and we hope they will modify the multipliers to make them suit, and let us know the result.

The Paumbem Channel.—It is satisfactory to find that the Indian Government has at length definitely decided upon the improvement of the Paumbem Channel between India and Ceylon. Nearly thirty years have elapsed since the subject was first brought forward by Sir James Elphinstone, who, struck with the advantages of the route during a visit to Ceylon, in 1844, has ever since persistently advocated the scheme now about to be carried out. To him, therefore, unquestionably belongs the credit of suggesting the undertaking, and not, as was erroneously stated in some of the daily papers—to Mr. Robertson, the engineer recently sent out to report on the Indian harbours. Mr. Robertson has simply endorsed Sir James Elphinstone's original idea, which was to cut a ship canal through the island of Ramisserani. Ever since 1839 the Madras Government have been engaged in deepening the natural channel in order to facilitate the coasting trade between Negapatam and Colombo; but from its narrow and tortuous character and the existence of strong currents, it has been all along obvious that no amount of labour would make the strait available for large vessels. The canal through Ramisserani will shorten the passage for all steamers rounding the peninsula of Hindostan by about two days, and in connection with the improvements in the Indian harbours, recommended by Mr. Robertson, it will tend to increase and develope the coasting trade of the country.

INFERNAL MACHINES FOR DESTROYING SHIPS.

Much excitement has been recently caused by the appearance in London of a gentleman, who carries about with him a metal casting of a lump of coal, about five inches long, by three inches broad, and two inches thick. This casting, of course, resembles exactly the piece of coal from which it is modelled, and being painted black and shiny, like coal, is a very clever imitation. It would pass in any steamship and in any coal scuttle for a veritable piece of coal. It would appear that the object of the invention is to place within the means of persons of a diabolical turn of mind a ready means whereby they can indulge in gunpowder plots on their own little account. The sham block of coal is, it is said, intended to be filled with Fenian fire, or gunpowder, or gun cotton, or dynamite, or nitro-glycerine, according as the playful turn of the Guy Fawkes, who is to use it, or cause it to be used, may determine. The exhibitor is not the inventor. Another ingenious contrivance, said also to have been used in sinking ships, is called by the pet name of "rat." The rat is said to be a boring machine, consisting of a reservoir of compressed air, which works a pair of cylinders, and rotates an augur or drill. The box containing the "rat" is placed in the bottom of the ship, and, after so many days, which are regulated by clockwork, the borer begins its work, and having done it, the drill drops out through the bottom of the ship, and the box, of its own accord, shuts up.

Here are a pretty pair of inventions, and they are, it is said, intended to work as explained below :—

The "black diamond" may be used as follows:—(1.) To lose a steamer, several of them, loaded with an explosive compound, are put into the bunkers, and explode when they get into the furnaces; or they may be filled with Fenian fire, and gradually set on fire the coal in the bunkers; or a good large lump, filled with nitro-glycerine, and deposited in the bunkers, will, when struck with a hammer to break it, under the impression that it is a large lump of coal, blow out the side of the ship. (2.) To destroy coal-laden ships, several may be stowed with the coals, after being filled variously. (3.) To destroy a fleet of ships of the Royal Navy of any country, the men in the service of the coal contractors are to take care to supply a certain number with every cargo of coals. In fact, it is not long since that information was given that a vessel left the Tyne with coal for the Spanish fleet, and that the Carlists had put on board a proper supply of these "black" diamonds.

We will now turn to the "rat." A ship is to be lost; the master knows all about it, and has stowed his rat properly. At the appointed time the rat begins, and at the appointed time it finishes, making a

convenient leak, and the master so juggles the sounding and pumping, that the leak is not found out until a convenient time arrives for leaving the ship in safety, and the ship is abandoned with so many feet of water in her hold, and the insurance on a fairly good ship and a fictitious cargo is recovered.

Here is a pretty state of things—a state that cannot be checkmated by surveys in port, unless every lump of coal is looked at, and the contents of every box viewed. If these infernal machines are worth anything, they go far to show that a survey in port, and a Government certificate, afford no guarantee of security. We shall return to a consideration of these "infernals" in our next number. They have already been noticed in the public press.

ROYAL OBSERVATORY, GREENWICH.

The report of the Astronomer Royal to the Board of Visitors, for 1873, contains the usual interesting record of the state of the buildings, instruments, &c., at Greenwich, and the disposition and condition of the work of the establishment up to June in the present year. The very important functions of this institution appear to be carried on most satisfactorily, and all things connected with the place and its duties are in good order. Many of our readers may be interested to know something of the operations by which the mean solar standard of time is obtained for comparing chronometers, &c., and we therefore extract the following from the report:—

"A sympathetic action by galvanic wires causes the indications of a small chronometer in the Computing Room to correspond exactly to those of the Sidereal Standard, and another such connexion causes the indications of another chronometer to correspond exactly to those of the Mean Solar Standard; and the assistant in charge of time-adjustments, on whose desk these two chronometers are placed, can therefore compare, by coincidence of beats, the Sidereal Standard and the Mean Solar Standard without quitting his seat. Correcting the indication of the Sidereal Standard by means of star-transits, so as to obtain true Sidereal Time, and converting this by calculation into true Mean Solar Time, he has a comparison of true Mean Solar Time with the indication of the Mean Solar Standard, and thus he obtains the error of the Mean Solar Standard. To correct this mechanically, he puts in action (by the ordinary speaking instrument) a galvanic current which animates a galvanic magnet in the clock-case, fixed there below a steel magnet which is carried by the pendulum of the Mean Solar Standard. With one position of the speaking-handle he introduces an attractive force which

slightly accelerates the pendulum-vibrations; with the other position he produces a force which slightly retards them. The amount of acceleration or retardation for each second being known, he possesses the power, by regulating the kind and duration of connexion of the speaking-instrument, of correcting the Mean Solar Standard, even to one-hundredth part of a second of time. It is unnecessary to describe the constructions by which this Mean Solar Standard maintains the rigorous correctness of sympathetic clocks, with which chronometers are compared, or by which time-signals are disseminated or time-balls dropped, &c.

"We have now in the chronometer-room 169 chronometers, whose errors and rates are ascertained by comparison with one of these sympathetic clocks. Of these, 100 box-chronometers, 15 pocket-chronometers, and 18 deck-watches, are the property of Government; 41 are the property of chronometer-makers, and are placed here on competitive trial, with the prospect of purchase to a limited extent. The Government chronometers are compared every day or every week, as appears necessary; the competitive chronometers are compared every day; and are also rated, at some time in different positions with respect to the magnetic meridian. . All chronometers are at some time rated in a temperature approaching to 100° Fahrenheit."

It seems that the accumulation of observations is getting very considerable owing to increased facilities, and at the same time the means of reducing these observations do not increase. The remarks of the Astronomer Royal on this point, at the conclusion of his report, are striking and suggestive. He says:—

"Of the enormous number of meteorological observations now made at numerous observatories, very few can ever possess the smallest utility.

"It may soon be necessary to alter the proportion of the two great sections of an observatory establishment; perhaps to diminish the observing power, certainly to increase the computing power. It is even conceivable that it may be found political to refer the computations to a national computing establishment. I do not, however, urge these matters as requiring immediate action; I merely desire to record ideas which may possibly have their influence in guiding future arrangements."

List of Vessels whose Names have been Changed:—*Ferdinand de Lesseps*, of London, to *Gt. Queensland*, of London; *St. David*, of Glasgow, to *Phœnician*, of Glasgow; *Clutha*, of Portsmouth, to *Alix*, of Portsmouth; *St. Ninian*, of Wigtown, to *Haitien*, of Liverpool.

STEAM SHIP BUILDING, 1873.

We stand as follows for the first four months of the present year for 21 ports. The ports are arranged according to the tonnage built in the first four months :—

Place.	No. of Ships. First 3 Months.	No. of Ships Added in May.	First 3 Months. Tons Gross.	Added in May. Tons Gross.
Glasgow ...	35	2	63,976	1,049
Sunderland	38	6	45,993	6,437
Newcastle	22	7	24,914	17,486
Liverpool	12	5	12,547	3,821
Greenock	4	1	12,437	845
North Shields	15	6	8,808	1,509
Port Glasgow	4	5	5,375	2,206
Hartlepool	4	1	5,146	1,037
Middlesboro'	4	2	4,643	2,983
Dundee ...	4	—	4,529	—
Aberdeen ...	6	—	4,128	—
South Shields	6	1	3,311	315
Hull ...	5	1	3,137	878
Stockton ...	3	—	2,803	—
London ...	7	1	2,735	1,515
Belfast ...	1	—	2,652	—
Kirkcaldy ...	1	—	2,019	—
Leith ...	1	—	1,400	—
Boness ...	1	—	1,080	—
Whitehaven	1	—	1,002	—
Other ports	5	3	594	260
Total	179	41	213,229	40,341

Appointment.—Mr. R. W. Sterry has been appointed an Assistant Examiner in Seamanship and Navigation at the port of London.

Registry of Ships.—The Brazilian Minister of Marine has given stringent orders obliging all Brazilian vessels of commerce to have their names legibly inscribed on the outside.

Examinations on the Tyne.—The Board of Trade have arranged with the Local Marine Board of Newcastle, Shields, and South Shields, that the latter port shall be the port at which examinations of masters and mates for the whole district shall be held.

"PLIMSOLECISMS."

THE following is extracted from a letter which appeared in the pages of "*Engineering*":—

"Those who now blame the Board of Trade, in the case of the *Parga*, were then loudest in the cry that the Board of Trade were working against Mr. Plimsoll. In this case they evidently acted heartily with him, candidly believing that his information was well founded.

"The owner appealed to the 'City of London Court' against the detention; and here we see the advantage of the provision of the Act that any proper person may act as surveyor and with all the powers of a Board of Trade surveyor in any case in which the court may appoint him. The court appointed Mr. Henry T. Tyrrell, of Lloyd's Registry, and two other surveyors, who inspected the *Parga* on the 28th of March, and the result of that survey was that one reports that 'the ship being full of cargo, he is unable to report fully upon her actual condition. He finds the decks require some repair, and an additional chain cable to be supplied, upon which he is of opinion that she could proceed on her intended voyage to Buenos Ayres without serious danger to human life.'

"Another of them reported that she was seaworthy. But Lloyd's surveyor reported virtually to the same effect as the surveyors of the Board of Trade, that he 'made an examination as far as practicable, but the ship being full of cargo, and no opportunity afforded of seeing the fastenings between decks and internal fittings, I am unable at present to make a full report upon her actual condition.'

"On the 5th April, the case came again before Commissioner Kerr, in the City of London Admiralty Court, on a motion to release the vessel. His honour said that as he was informed that a full survey of the ship could not be made without the discharge of the cargo, he thought it only reasonable that it should be done; he would therefore make an order for the cargo, or so much of it as might be required to be removed, to be discharged, in order that the full and complete survey might be made. The result of this further survey was a report from the Court's surveyors that the vessel was seaworthy. The Board's surveyors, who had instructions thoroughly to examine this vessel to give the utmost consideration to the information lodged by Mr. Plimsoll, would not survey unless allowed to pierce some of the timbers, as is usual in surveys of old wooden vessels, so that no Board of Trade surveyor has ever reported that the *Parga* was unseaworthy, or that she was seaworthy. The cargo was removed on account of Lloyd's surveyor's report, and the vessel was stopped at first principally on account of the corroboration afforded by

Captain Edgell in his report to Lloyd's, and the enthusiastic representations of Mr. Plimsoll, who, although the Board's surveyor had written on his report, dated March 21st, that the captain was sole owner, and had been in the vessel ten years, yet wrote on March 24, the following letter, the only really disgraceful thing disclosed in the whole proceedings :—

'111, Victoria-street, S.W., March 24th, 1873.

'Sirs,—Yours of the 22nd inst., is to hand.

'I will not give you the name of my informant. I will make no apology; and as to compensation, the only compensation due to your clients, and all other ship-owners who send unseaworthy vessels to sea with men a thousand times better than themselves on board, is, in my opinion, a halter apiece, and the offices of a hangman. Do your worst.

'(Signed) SAMUEL PLIMSOLL.

'Messrs. Lawless, Nelson, and Jones, solicitors,
'26, Martin's Lane, Cannon Street.'

"This is a letter from a member of Parliament on a case then finished. After it is proved that Captain Newby's ship was seaworthy, Mr. Samuel Plimsoll, the 'sailor's friend,' sentences him to be hung. So much for the sailors' friend's charity to an honourable master sailor.

"The cause of the expense in this case was the obstinacy of Captain Newby, who opposed, as far as he could, the removal of any of the cargo to allow of an examination of the internal fastenings. Perhaps I may throw some more light on the position of the Board of Trade Department in connection with the *Parga's* case if I direct your attention to some passages in Mr. Plimsoll's book. The above letter, and the result of the case will show clearly how dangerous it is to be lead by Mr. Plimsoll, for the expenses in this case amount, not to hundreds only, but to thousands; and he evidently thinks all who will not be championed by him are the sailors' enemies, and that the Board of Trade Marine Department, to whom he has administered Plimsoll *ad nauseam*, are to be held up to execration because they will neither supply hangmen nor halters at his orders for such men as Captain Newby, to whom I apologize for this association in which I present his name—the name, I believe, of a thoroughly respectable and honourable man. The Marine Secretary of the Board of Trade has the same ultimate object in view as Mr. Plimsoll professes to have. I say 'professes,' for, from his recent actions, it is beginning to appear that his object is beyond the practical saving of life, and that, dazed by the grandeur and the glory that he sees in the distance at the back of his nominal object, he is jealous of any independent fellow-worker who may be quietly doing the good that comes in his way without the tournament trumpeting of the member for Derby, who in his preface asks his friends to think, 'what a grand and glorious thing it will be if, by *any* sacrifice, we can put a stop to the dreadful and the shameful waste of precious human life which is now going on.' Now,

no true hero of the highest type would place such an object before himself—'what a grand and glorious thing it will be.' Amateur philanthropists and schoolboys are moved by such considerations, but never true men.

"At page 8 of his book, Mr. Plimsoll attacks a gentleman belonging to to the Board of Trade. He has proposed to his followers '*any* sacrifice' to attain their end, and he begins by the sacrifice of truthfulness and candour. The ground of his attack is that that gentleman has said, 'Let ships be lost, let cargoes be lost, so long as underwriters are too sordid or too lazy to refuse payment of doubtful and fraudulent cases.' Mr. Plimsoll has separated completely the head from the tail in the quotation, and in the tail lay the force of the remark. It is as if Portia's judgment were quoted as, 'Take thou thy bond, take thou thy pound of flesh;' and upon that quotation that 'upright judge' held to execration as a monster of cruelty. Read the whole. It continues, 'But in the cutting it, if thou dost shed one drop of Christian blood, thy lands and goods are, by the laws of Venice, confiscate unto the State of Venice.' And in like manner complete the quotation from the Marine Secretary's speech, and that for which he is condemned appears at once in an opposite light, and becomes a credit to him. The quotation is, 'Prevention, it was well known, was better than cure, and prevention in some shape must be looked to; the only question is how it could be applied. Some people wished to prevent loss of life by inspections, certificates, and Government interference, whilst another mode was to abolish Government interference altogether, and to leave the owner responsible for his own acts, and to make him pay in the event of culpable neglect, or any abuse of the power entrusted to him. Take the case of railways; he did not believe that if a Board of Trade official were to inspect every line of railway daily, sit on every engine and watch it, be at every signal post, and smell every man's breath to make sure he was not drunk, there would be so few accidents as under the present system, by which heavy damages were given against railway companies in case of accidents. Let a shipowner do his business and mind his business, and let the underwriters and Government do the same. Let ships be lost, and cargoes be lost, so long as underwriters are too sordid, or too lazy to refuse payment of doubtful and fraudulent cases. BUT IF THE SHIPOWNER PUTS THE COUNTRY TO EXPENSE, OR CAUSES OR CONTRIBUTES TO THE DEATH OF A CITIZEN, LET HIM HAVE JUSTICE WITHOUT MERCY.'

"By the omission of the last sentence Mr. Plimsoll wilfully misrepresents the words of the man who is his only rival in the field in which he has chosen to grow something 'grand and glorious' for himself and those who swear by him."

BOOKS RECEIVED.

Monthly Notices of Meteorological Society of Mauritius, February, 1878. In these notices is published a paper on "The Supposed Periodicity of the Rainfall," contributed by the secretary of the Society. The subject is ably and exhaustively treated. Towards the conclusion the following passages occur :—

"Mr. Lockyer has already pointed out the main lines of investigation, and I would specially suggest the possible importance of examining the *distribution* of spots over the solar disc, and of temperature, storms, and rainfall over the earth's surface, with a view of discovering *local* connections.

"I would remark, also, that if there is a rainfall periodicity dependent on the sun spot periodicity, this relation exists every day and every week, and that it may be possible to connect weather changes of short duration with solar changes of short duration.

"It had been usually assumed, although he believed it would be difficult to assign any sound reason for doing so, that the sun did not vary, and that the amount of solar heat annually received by the earth being a constant quantity, the annual rainfall over the globe was also constant. This doctrine would, he ventured to say, be found to be untenable. But further investigation was necessary, and with that view he would send copies of his remarks to the meteorologists of other countries."

Another interesting and valuable paper, entitled "Notes on the Form of Cyclones in the Southern Indian Ocean, and on some of the Rules given for Avoiding their Centres," is also published, and after numerous instances of cyclones have been cited, the author concludes with the following remarks, which are well worth the attention of meteorologists :

"The really dangerous position for a vessel is with the wind from north-eastward to S.S.E., and more especially from south-eastward.

"When the wind is between N.E. and E.S.E., our advice would be to lie to at once.

"With the wind from south-eastward, and the barometer still high, though falling, we would also heave to, because, as yet, the bearing of the centre cannot be known. If the wind hauled decidedly to the southward, and passed to the south of S.S.E., we would hold to the northwestward without loss of time, but if it veered to the eastward, we would either lie to on the port tack, or endeavour to make easting.

"On no account, whatever, would we run to the southward, or southwestward, with the wind anywhere between north and east, but make as much easting as possible.

"The most dangerous case of all is, when the wind is steady from S.E., the barometer falling, and the wind gradually increasing in force. What is a vessel to do under these circumstances? If she runs to the N.W., she may be going straight to the centre. Upon the whole, we think she cannot do better than lie to and watch the wind and barometer. The chances are that the wind will veer, and that she will know, before it is too late, whether it is best to run to the north-westward, to remain where she is, or to hold to the eastward. But if the wind does not veer, and the barometer has fallen from the commencement fully *six*-tenths of of an inch, we would, as a last resort, run to the north-westward, if possible. We say *six*-tenths, because four-tenths, which was the amount of fall mentioned in 1863, is too small. In the centre of a cyclone in these seas, the barometer always falls below 28 inches.

"The above remarks apply chiefly to vessels encountering cyclones, which have not yet commenced to curve to the south-ward and south-eastward.

When a storm is travelling to the southward, or south-eastward, I would still, with the wind anywhere between north and east, make as much easting as possible, and not, as recommended in 1863, run to the south-westward, for we now know that the north-easterly and easterly winds often, if not always, blow towards the centre."

Mittheilungen aus dem Geibiete des Seewesens. Pola, 1873.

This is the first number of a new monthly periodical issued by the Hydrographical Department of the Austrian Navy at Pola. We are glad to receive a copy of so important a work, published under such favourable auspices. We learn from it that land-bound Austria is moving energetically and intelligently in marine matters. The work in question is well printed in Roman type, and contains very much information of interest and value.

Breakwater at Aberdeen.—In consequence of the somewhat unusual prevalence of bad weather in spring, the work at the new south breakwater at Aberdeen was only resumed in the early part of last month (June). About 800 feet—or approximately three-quarters—of the entire length of the breakwater have already been constructed, and the access to the harbour in stormy weather has been thereby greatly improved. Owing to the greater depth of water which has now to be encountered, and the later period at which the works have this year to be commenced, it is not expected that more than 300 additional feet will be finished before the end of the season. The breakwater is constructed entirely of concrete, partly laid down in solid blocks, and partly cast on the spot in wooden moulds, built under water. Mr. Dyce Kay, C.E., is the resident engineer.

MONTHLY ABSTRACT OF NAUTICAL NOTICES.

No.	Place.	Subject.
116	Belgium—Schelde—Weilingen channel—Nieuwe Sluis	Alteration in Light.
117	France—West Coast—Pilier Light	Alteration in Light.
118	Spain—Ferrol Harbour	Shoal Ground in channel.
119	Canada—St. Lawrence River—Red Island Light vessel	Additional Light.
120	United States—Delaware River—Reedy Island Light	Alteration in Light.
121	Spain—Cadiz Harbour	Removal of Buoys.
122	South America—River Plate—English Bank	Establishment of a Bell Buoy.
123	Mediterranean—France—Port St. Raphael	Establishment of a Harbour Light.
124	Black Sea—Bug River—Sviatotroitski Light	Alteration in Light.
125	South America, West Coast—Equador—Esmeralda River	Establishment of a Harbour Light.
126	Persian Gulf Entrance—Kuh Mubarak Shoal	Position of Kuh Mubarak Shoal.
127	New Brunswick—Bay of Fundy—Cape Spencer	Establishment of a Light.
128	Channel Islands—Herm Island	Establishment of Beacons on Dangers
129	Channel Islands—Guernsey—St. Peter Port	Establishment of a Harbour Light.
130	Borneo—River Sarawak—Po Point	Establishment of a Light.
131	Adriatic—Segna or Zengy	Establishment of Harbour Lights.
132	River Plate	Alteration in Light Vessels.
133	Norway—Christiania Fiord—Torgauten Light	Alteration in Light.
134	China—Hungwha Channel	Discovery of a Small Bank.
135	Mediterranean—Greece—Marathonisi—Crance Island	Establishment of a Light.
136	United States—Massachusetts—Newbury Port	Establishment of Leading Lights.

NAUTICAL NOTICES.

116.—Belgium.—*Schelde.—Weilingen Channel.—Nieuwe Sluis Light.*—The following alteration has been made in the auxiliary, or outer, light. The light shows *red* from the eastward between the bearings W. by S. and S.W. by S. Vessels entering the river by the Weilingen channel passing from the *red* light into the *white* will then have passed the Kadzand and Hompel, and can quit the leading mark of Niewe Sluis lights.

117.—France.—*West Coast.—Pilier Light.*—The red sector seen from the southward, and marking the Chausée des Bœuf, has been enlarged, and is now visible between the bearings N. ¾ E. and N.E. ¼ E.

118.—Spain.—*Ferrol Harbour.*—Information has been received of the existence of shoal ground, lying off Palma castle, inner part of the channel leading to Ferrol harbour. The rocky ground (Palma shoal) lies immediately to the northward of Palma castle and lighthouse, at a distance of one cable from the shore, and is about one cable in extent, running parallel to the shore, with 4 fathoms on the shoalest part, near the centre, and 4½ fathoms at either end, at low water springs, and 6 fathoms between it and the bank of shoal water fronting Palma castle. Vessels of draught, exceeding 24 ft. must pass to the northward of the Palma shoal.

119.—Canada.—*St. Lawrence River.—Red Island Light-vessel.*—A white dioptric light is exhibited from the mainmast of the Red island light-vessel, in addition to the light previously exhibited on the foremast.

120.—United States.—*Delaware Bay.—Reedy Island Light.*—The fixed white light is changed to a *fixed red* light.

121.—Spain.—*Cadiz Harbour.*—The following buoys have either been removed or washed away, viz., Cochinos, Galera, and Rota reef buoys. The buoys in this harbour are not to be depended on.

122.—South America.—*River Plate.—English Bank.*—A *bell* buoy, painted *red*, has been placed on the outer or eastern side of the bank, and is visible from a distance of about 3 miles. The buoy is moored in 28 ft. water at a distance of about 5 miles from the central part of the bank, which generally breaks, and S.E. ½ S. 10 miles from the English bank light vessel. The south point of the bank lies S. by W. ¾ W. 7½ miles, and the north point N.W. ¾ W. 9 miles from the buoy. The position of the buoy is in lat. 35° 14′ S., long. 55° 46′ W.

123.—Mediterranean.—France.—*Port St. Raphael.*—A *fixed* white light is exhibited from a lamp-post, at the head of the jetty; it is elevated 30 feet above the sea, and in clear weather should be seen from a distance of 7 miles. Position, lat. 43° 25′ 20″ N., long. 6° 45′ 50″ E.

124.—Black Sea.—*Bug River.—Sviatotroitski Light.*—This light has been changed from a fixed white light to a *fixed red* light.

125.—South America.—*West Coast.—Equador.—Esmeralda River.*—A *fixed white light* is now exhibited on Coquito point, west side of the entrance of the river. It is elevated 30 feet above the sea, and should be seen 9 miles. The lighthouse is painted white and red. Position, lat. 1° 0′ N., long. 79° 41′ W.

126.—Persian Gulf Entrance.—*Kuh Mubarak Shoal.*—This shoal lies between Râs Jûshk and Râs el Kúh at a distance of 3 miles from the shore and in the fairway track of vessels proceeding along the Mekran coast to the Persian Gulf; it bears S.E. (easterly), 12 miles from Kuh Mubarak, and its position is in lat. 25° 42′ 10″ N., long. 57° 28′ 20″ E. The shoal is a clay bank of small extent, with 9½ feet on it at low water,

and is steep to, having 13 fathoms close to, on the seaward side, and 12 fathoms between the shoal and the shore.

Note.—Caution is necessary in navigating this portion of the coast, as the land is low, and error in judgment of distance from it possible.

127.—New Brunswick.—*Bay of Fundy.—Cape Spencer.*—A *revolving red and white* light, visible seaward from E.S.E. to W.N.W., showing *red* for *forty-five seconds*, and *white* for *forty-five seconds* with an interval of *forty-five seconds* between *each appearance* of the light, making a complete revolution in *three minutes*, is now exhibited on the cape; it is elevated 207 feet above the sea, and should be seen 20 miles.

128.—Channel Islands.—*Herm Island.*—The following beacons have been erected on dangers near Herm island, viz.:—

1. *Grande Amfroque*, north-east from Herm. Two conical stone towers have been erected, the easternmost is 35 feet above the rock, and painted *black and white in horizontal bands*, the westernmost is 20 feet high, and painted *white*. Both are surmounted by a staff and ball, and the eastern beacon has a horizontal bar near the summit, which is seen between the bearings S.W. to S.E.

2. *Tautenay*, north of Herm, a beacon tower, 22 feet high, painted in *black and white vertical stripes*, and surmounted by a staff.

Note.—This beacon in line with Doyle's Column, Guernsey, will lead 1½ cables west of Platte boue, and when at the same distance to the northward of Platte boue the two beacons on the Grande Amfroque will be in line. The buoy marking the Platte boue rock has been removed.

129.—Channel Islands.—*Guernsey.—St. Peter Port.*—A round tower is in the course of erection on the extremity of the northern jetty, and provisionally, until the tower is finished, a *fixed green* light is exhibited from a lamp-post at the end of the jetty.

130.—Borneo.—*River Sarawak.—Po Point.*—A *fixed white* light is now exhibited on the summit of the point at the Moratabas entrance of the river; it is elevated 492 feet above the sea, and should be seen 14 miles. Position, lat. 1° 44′ N., long. 110° 30½′ E.

131.—Adriatic.—*Segna or Zengy.*—Two harbour lights are now exhibited at the entrance of the harbour—viz., a *fixed white* light, visible 7 miles on the extremity of the mole "Ambos," north-west of the town, and a *fixed red* light visible 3 miles on the mole "Art," south-west of the town. This last-named light cannot be lighted in stormy weather.

132.—River Plate.—Information has been received that the light-vessel on the Chico bank has sunk, and that the other lightvessel near Indio point has been removed 3 miles further northward.

133.—Norway.—*Christiania Fiord.—Torgauten Light.*—On the 1st August, 1873, the sector of this light will be enlarged, and be visible to

S.E by E. ¼ E., and it will show a *red* sector between the bearings E. ½ S. and E. ¾ N. across the Strutskrakken banks.

184.—China.—*Hungwha Channel.*—A small bank (Volga bank) has been discovered eastward of White island, it has 9 feet water on it. Position, lat. 25° 19′ 10″ N., long. 119° 38′ 30″ E.

185.—Mediterranean.—*Greece.*—*Marathonisi.*—*Cranae Island.*—A *fixed* and *flashing* third order light, showing a *red* and *white* flash alternately *every minute* is now exhibited; it is about 98 feet above the sea, and should be seen 15 miles. Position, lat 36° 44½′ N., long. 22° 35½′ E.

186.—United States.—*Massachusetts.*—*Newbury Port.*—Two *red* leading lights of the third order have been established; the outer light is on Bailey's new wharf, near the east corner, and the other W. ½ S., 117 yards from the outer light.

Note.—After entering the harbour, and passing the Black rocks beacon, these lights will come in line W. ½ S. which course will lead between the North and South beacons.

Charts, *&c., Published by the Hydrographic Office, Admiralty, to the end of June,* 1873, *and Sold by the Agent,* J. D. Potter, 31, *Poultry, and* 11, *King Street, Tower Hill.*

No.	Scale.		s.	d.
803	m = { 12·4 / 8·6 }	West Indies, St. Domingo: Jeremie Bay, and Miragsane Harbour ...	1	0
769	various	South Pacific—Plans of six Harbours and Bays	1	0
768	m = 1·0	New Zealand, Middle Island—Daggs Sound to Caswell Sound	2	6
471	m = 4·0	West Indies—Manzanillo Bay, St. Domingo	1	0
771	m = 8·5	Hancock Bay, Oho Sima (between Lu-Chu and Japan	1	0
14	various	Red Sea—Harbours and anchorages ...	2	0
764	m = 2·8	South Pacific—St. George's Channel, between New Britain and New Ireland ...	1	0
778	m = 0·48	North Pacific—Eniwetok or Brown Group, Marshall Islands	1	0
772	various	North Pacific—Uluthi or Mackenzie Islands, &c., Caroline Islands	1	0
774	m = 0·46	North Pacific—Namonuito Islands, Caroline Islands	1	0
728	m = { 3·1 / 6·2 }	Dominica—Prince Rupert and Woodbridge Bays and Roseau Roads	1	6
776	m = various	Pacific—Mortlock Islands, Caroline Islands	1	0
1814	m = 2·4	Valparaiso Bay	1	6

Books.

China Sea Directory, Vol. IV.	6	0

OUR OFFICIAL LOG.

Board of Trade Circulars.

Spring Safety Valves.—The Board of Trade having now authorized a sufficient number of Spring Safety Valves to serve for purposes of experiment, the Surveyors are informed that they do not propose to authorize the passing of any more until further orders. Surveyors should not grant Declarations for the Machinery of any Steamers fitted with Spring Safety Valves, unless the written authority of the Board of Trade is produced in each case. Whenever the Surveyor gives a Declaration he should state the No. and Description of Safety Valves; and in the case of Spring Valves, the name of the Patentee, and the No. and Date of the Board's authority for fitting the Valves.—*May*, 1873.

Chain Cables and Anchors.—Receivers of wreck are informed that by the new Chain Cable and Anchor Act, 34 & 35 Vict. chapter 101, it is enacted, that Chain Cables and Anchors, which have not been previously tested, shall not be sold, contracted for, consigned, or purchased by any person except as old iron. All wrecked anchors and chains must, therefore, be sold for the future as old iron. Receivers of wreck are requested to make this known to persons undertaking to salve anchors and chains, and others who may be interested in the proceeds of sale thereof.—*March*, 1873.

Instructions to Consuls.—Registry of Ships.—The Board of Trade desire to call attention to the Merchant Shipping Act, 1872, which came into operation on this date. Under the provisions of this Act, the General Register of Shipping for the United Kingdom and Colonies will for the future be kept by the Registrar-General of Shipping and Seamen, and the measurement of vessels and the check upon such measurement will be conducted by the Board of Trade. From and after this date, therefore, the Returns heretofore sent to the Chief Registrar of Shipping should be forwarded to the Registrar-General of Shipping and Seamen, at Adelaide Place, London Bridge, London, and application should be made to that officer for such allotments of official numbers for vessels as may be required.—*March*, 1873.

Consuls' Fees.—With the consent of the Secretary of State for Foreign Affairs, the Board of Trade will in future issue receipts in the accompanying form (C. 32) for all Consular Fees charged in connexion with Shipping and Seamen. One of the accompanying Receipts for Fees is to be given to the Master in every case in which one or more Fees is charged. A space is left to fill in a statement of Fees not printed on the Form. This statement should follow closely the description of the Fee as authorized by the Orders in Council of May 1st, 1855, and June 19th,

1868. Books of the Form C. 82 will be supplied by the Board of Trade on demand in the usual manner. The counterfoils are to be preserved in the Consulate for reference.—*April*, 1873.

Anchors and Chains.—Receivers of Wreck are informed that Anchors and Chain Cables recovered as Wreck must be dealt with as follows, as soon after the receipt of this Circular as possible:—First. Where the Chain Cables or Anchors delivered into the Receiver's custody seem to be fairly good, and there is a Test House conveniently near, they can be tested, and those which stand the test can be sold as Chain Cables and Anchors. Those which do not stand the test must be sold as old iron. See regulations No. 2 below. Secondly. When Anchors and Chain Cables are evidently not sufficiently good, or are very old, and there is no Test House within a reasonable distance, one Arm of the Anchor is to be broken off, or the Shank is to be broken through, and Chain Cables are to be cut, so that they may be sold in lengths not greater than 7½ fathoms each. They are then to be sold as old iron. Thirdly. The present rate of salvage is to remain in operation unless further directions are given.—*April*, 1873.

Wrecks, Casualties, &c.—As on several recent occasions when wrecks have occurred, and have been accompanied by scenes of disorder and plundering, Receivers have stated as their reason for not being present that Lloyds Agents or the Owners were on the spot, the Board of Trade wish to point out to officers entrusted with duties in connexion with wreck, under the 8th part of the Act, that the fact of Lloyds Agents being present, or of the Owners being on the spot and able to take charge of their property, does not at all relieve them from attending at the scene of the wreck and doing all in their power to prevent plunder and disorder. —*May*, 1873.

Draught of Water.—A new Form of Report is sent herewith. Surveyors should obtain supplies of this Form from Superintendents of Mercantile Marine Offices at once. A few copies are enclosed for present use. The new Form is to come into operation as soon as it is received. In no case are the Surveyors to record an *opinion* on the Form. Everything stated must be fact, obtained from actual inspection. Special care is to be taken in measuring the clear side.—*May*, 1873.

Draught of Water.—With reference to Circular 621 and Stm. Form, Surveys 101, the attention of Surveyors is directed to the following alteration:—The measurement for clear side is to be taken at the lowest part of side amidships, and means the height from the water to the *upper* side of deck plank. It is to be ascertained as follows:—The depth is to be measured from the rail to the water, and then again inboard from the rail to deck, and this latter measurement deducted from the former, the result will be the clear side. Should the ship have a list, both sides must be measured. The note on the Form Surveys 101 should be

altered accordingly when copies are forwarded to this office.—*May*, 1873.

LIFE SAVING APPARATUS (ROCKET AND MORTAR).—SCALE OF TRAVELLING AND SUBSISTENCE ALLOWANCES TO INSPECTING OFFICERS OF COAST GUARD.—The following extract from page 48 of the Appendix to the Special Coast Guard Instructions is forwarded for the information of Superintendents and Deputy Superintendents, to enable them to carry into effect the Instructions contained in Circular 588, relating to the examination of claims made by Inspecting Officers of Coast Guard, on Forms L.S.A. 28.

RANK.	Distance, 3 miles* and under 10 miles.	Distance, 10 miles* or more.		
	If there be no public conveyance, the following allowance to cover all charges.	When absent above 6 hours, but not out at night.	When absent above 6 hours at night.	When absent the entire night and day.
	s. d.	s. d.	s. d.	s. d.
Commanders - -	10 0	6 0	4 0	12 0
Other Divisional Officers - -	10 0	5 0	4 0	10 0

ENGAGEMENT AND DISCHARGE OF CREWS.—In consequence of representations which have been made to this Department by the owners of large steam ships employed in regular trades, remaining but a very short time in ports, and whose crews, or a considerable portion of the seamen, continue by the ships of the same line voyage after voyage, the Board of Trade have determined to allow the engagements and discharges of the crews to take place on board the vessel instead of at the Mercantile Marine Office. The Board of Trade propose to grant authority in those cases only in which the discharge from one voyage and the engagement for the next to take place at one operation, and in which not less than half of the crew of the preceding voyage are re-engaged for the next. The following are the conditions:—1. The engagement and discharge shall take place before a Superintendent of a Mercantile Marine Office, or his Deputy. 2. A fee of £2 shall be paid in each case of attendance on board in addition to the ordinary tonnage fees prescribed by the Act. 3. Notice of the wish that the engagement and discharge shall take place on board shall be given at the Mercantile Marine Office of the port, within office hours, and not later than the day before the operation is to take place, and at the time of giving notice all fees shall be paid. 4. It shall

* The distance in miles is the distance from the point of departure to the place visited, and not the distance out and back again.—*May*, 1873.

be in the discretion of the Superintendent of the Mercantile Marine Office to decline permission for his officer to attend on board at any time when in consequence of pressure of office business or for other cause, he shall consider it expedient so to do. Every such refusal with the reason therefore to be notified to the Board of Trade by the same day's post. 5. The permission shall be given only for steam ships in respect of which general authority has been given by this Board upon the application of their owners. Such authority the Board reserve to themselves the right at any moment to withdraw. 6. The Ships Articles and the Certificates of Discharge shall be made out by the officers of the Company, and be countersigned by the Deputy Superintendent. 7. All the rules contained in the Merchant Shipping Acts as applying to engagements and discharges in Mercantile Marine Offices shall be observed in the operations to which these instructions refer, as if such engagements and discharges took place in the Mercantile Marine Office. It is to be clearly understood that the seamen's rights with regard to wages and freedom of action must be in no way prejudiced. 8. Any travelling or other expenses to which the office may be put in any case, must be repaid by the owner of the ship for which they have been incurred. 9. The Superintendent will be allowed to pay only one visit to the ship for one crew for the fee of £2. The seamen not then engaged or discharged will either have to go to the Mercantile Marine Office, or the Deputy Superintendent will, if the office arrangements permit, attend to complete the crew for an extra charge of 5s. a visit. The Superintendent will make a return to the Board of Trade of all work performed under this regulation.—Form herewith, Eng. 4.—*June*, 1878.

BOARD OF TRADE SURVEYORS.

REMOVALS, APPOINTMENTS, &c.—We learn that the periodical removals of Surveyors has taken place. The principle feature of the changes would appear to be the entire re-organisation of the Staff in the North-Eastern District, including the consolidation of a strong body of Surveyors on the Tyne and Wear. The officers of the district are now as under:—

NEWCASTLE.—Leighton Mills, S. and E. Surveyor; Principal Surveyor for the district, and Examiner in Steam (promoted from Hull). J. G. Taylor, Assistant S. and E. Surveyor (removed from Liverpool). J. B. James, Assistant S. and E. Surveyor (removed from London). H. W. Reed, Assistant S. and E. Surveyor. W. Hayes, appointed Assistant S. Surveyor. Two Tapeholders.

SUNDERLAND.—M. Wawn, S. and E. Surveyor for the port and sub-district, and Examiner in Steam. J. Vercoe, Assistant S. and E. Sur-

veyor (removed from Cardiff). R. T. Williamson, S. Surveyor. E. Monger, Assistant S. Surveyor. Two Tapeholders.

We hear that there is likely to be a further removal, as it is intended ultimately to make Stockton into a sub-district, with an Assistant S. Surveyor, for the inspection of crew spaces and lights, tonnage, admeasurement, &c., at that port and at Middlesboro'.

HULL.—J. Spear, S. and E. Surveyor, and Examiner in Steam, for the port and sub-district. T. J. Richards, S. and E. Surveyor, and Examiner in Steam (removed from Falmouth). J. McKenzie, assistant S. and E. Surveyor (removed from Belfast); one officer to record draught of water.

The changes in the other districts are: W. Parker, from Newcastle to London; G. Herriot, London to Liverpool; H. Hoar, Shields to Falmouth; J. J. Rose, Hull to Belfast.

We observe that the undermentioned appointments have been made since our last notice—viz.: J. B. Robertson, London, Assistant S. Surveyor; H. B. Fabian, Cardiff, Assistant S. and E. Surveyor; J. Saunders, London, S. and E. Surveyor; J. Ramsay, London, S. and E. Surveyor; Captain Sandeman, Liverpool, S. Surveyor; Walter Abbott, Queenstown, S. Surveyor (temporarily in London); G. H. Loxdale, Assistant S. and E. Surveyor, London.

Mr. J. Ramsay was selected from active duty in the *Egypt*, and Capt. Sandeman is taken over from Lloyds Salvage Association. Liverpool seems to be well represented just now: First we have Capt. Digby Murray, of the White Star Line, as professional Officer of the Marine Department, with a seat at the Board, then Mr. Herriot of the same line, then Mr. Ramsay, then Capt. Sandeman, and Mr. Bretland of Messrs. Clovers.

It has, we learn, been decided to place Surveyors at Deal and Weymouth owing to delays and expenses, of sending Surveyors to those places to survey ships on the complaints of crews.

RETIREMENT.—Mr. Mackinlay, the well-known shipwright Surveyor, has retired on a pension.

ENQUIRY BEFORE A MAGISTRATE.

No. 10.—*Rosina.*—On 16th May, 1873, an enquiry was held at the Cardiff Police Court, into a charge of desertion and drunkenness preferred against the mate of the *Rosina.* He was sentenced to two weeks' imprisonment and his certificate suspended for three months.

NAVAL COURT ENQUIRIES.

No. 21.—*Atacana.*—On the 9th April, 1873, a Naval Court was held at Callao, under the presidency of H.B.M. Consul, to enquire into a

charge of mutinous conduct preferred against the 2nd engineer of the *Ataeana*. His certificate was suspended for six months and he was sentenced to be dismissed the ship, and ordered to pay the costs of the enquiry.

No. 22.—*Annie*.—On the 27th May, 1878, a Naval Court was held at Genoa, under the presidency of H.B.M. Consul, to enquire into a charge of assault preferred against a seamen of the *Annie*. He was sentenced to be imprisoned for twelve weeks, unless the master was pleased to receive him on board again before that time had elapsed. Costs to be deducted from previous wages.

Local Marine Board Enquiry.

No. 8.—*Jane and Harriet*.—On the 28th May, 1878, an enquiry was held before the Local Marine Board, Hull, into a charge of drunkenness and gross misconduct preferred against the master and the mate of the *Jane and Harriet*. Their certificates were suspended for twelve months.

Board of Trade Inquiries at Home.

71. *Charles*, of Wexford, supposed to have foundered between Kingstown and Wexford, on or about the 5th January. Inquiry ordered 23rd January, with Captains Harris and Hight as nautical assessors, and held at Dublin, 17th February. Master of *Countess of Dublin* exonerated for not having rendered assistance to the crew of the *Charles*.

83. *Staffordshire*, of Liverpool. Proceedings pending.

94. *C. M. Palmer*, of Newcastle, came into collision with the *Larnax*, in Gravesend Reach. Inquiry ordered 24th March, and held at Greenwich, 16th April. Both vessels blamed. The Court, under special circumstances, took no action with regard to the masters' certificates.

103. *Ranger*, of Newcastle, stranded 30th March, at Cullercoats. Inquiry ordered 16th April, and held at Newcastle, 14th May, before R. Cail, Esq., mayor, H. Milvain, Esq., J.P., with Captain Steel and Commander Prowse as nautical assessors. Master in default, but he held no certificate.

105. *Anglian*, of Dublin. Proceedings pending.

106. *Eliza*, of St. Ives, run down by *Sir Bevis*, of Southampton, about four miles off Lundy Island. Inquiry held 13th May, at Middlesbro', before J. Hains, Esq., J.P., and R. Dixon, Esq., J.P., with Captains White and Wilson as nautical assessors. Master in default. Certificate suspended for six months.

107. *Bard of Avon*. Proceedings pending.

108. *Margaret*, of Perth. Proceedings pending.

109. *Sisters*, of Bridgwater, stranded on the Horse Shoe Bar, 27th April. Inquiry ordered May 9th, and held at Bridgwater, 19th May, before G. B. Sully, Esq., J.P., R. Salmon, Esq., J.P., with Captains Oates and Steele as nautical assessors. Master found in default.

110. *Glendale*, of Newcastle, abandoned near Goodwin Sands, 27th April. Inquiry ordered 16th May, and held at Newcastle 29th May, before H. Milvain, Esq., J.P., B. Plummer, Esq., J.P., with Captains Oates and Steele as nautical assessors. The casualty occurred through neglect of the log and lead. Master's certificate suspended for nine months, from 30th May.

111. *Satellite*, of Liverpool, abandoned 1st February. Inquiry ordered 20th May, and subsequently abandoned.

112. *Russell*, of Arundell, stranded 17th December, 1872. Proceedings pending.

113. *Wentworth*, foundered 7 miles from outer Downing. Inquiry ordered 20th May. Proceedings pending.

114. *Fly*, of Cardigan, foundered off Fishguard Roads, 27th April. Inquiry ordered 20th May, but subsequently abandoned.

115. *Sarah Margaret*, of Whitby, stranded off Whitby Rocks, 5th May. Inquiry ordered 10th May, and subsequently abandoned.

116. *Thomas*, of Whitby, foundered near St. Abb's Head. Inquiry ordered 20th May. Proceedings pending.

117. *International*, of London, stranded near . Light. Inquiry ordered 20th May, but subsequently abandoned.

118. *Whampoa*, of London, stranded at Lundy Island. Inquiry ordered 23rd May, with Captains Hight and Harris as nautical assessors. Proceedings pending.

119. *Zeno*, of Hull, foundered 220 miles off the Scilly Islands, 18th May. Inquiry ordered 27th May, with Captain White and W. Darley, Esq., as nautical assessors. Proceedings pending.

120. *Isabella Sarah*, of Newcastle, abandoned lat. 55° 26′ N., lon. 3° 8′ E., 5th January. Inquiry ordered 5th June. Proceedings pending.

121. *Friends*, of Whitby, stranded off Olands Lighthouse, 10th April. Inquiry ordered 5th June. Proceedings pending.

122. *Catherine*, of Wexford, stranded on Crow Rocks, 18th May. Inquiry ordered 5th June. Proceedings pending.

123. *Active*, of Great Yarmouth, sunk, 26th May, after collision in the North Sea. Inquiry ordered 7th June, with Commander Knox and Captain White as nautical assessors. Proceedings pending.

124. *Susannah and Elizabeth*, of Beaumaris, foundered near New Brighton, 9th December, 1872. Inquiry ordered 7th June. Proceedings pending.

125. *John Cock*, of Middlesborough, stranded off Saltfleet, 4th November, 1872. Inquiry ordered 9th June. Proceedings pending.

126. *Emily Burnyeat*, of Whitehaven, stranded at Porcrassa Bay, 23rd May. Inquiry ordered 9th June. Proceedings pending.

127. *Repealer*, of Newry, foundered off the Rock a Bill Lighthouse, 25th May. Inquiry ordered 16th June. Proceedings pending.

128. *Llanelly*, of Llanelly, stranded on the Bishops Rocks, 11th May. Inquiry ordered 19th June. Proceedings pending.

129. *Volunteer*, of Shoreham, abandoned in the North Sea, 18th November, 1872. Inquiry ordered 19th June. Proceedings pending.

130. *St. Columba*, s.s., of Dublin, stranded on the Skerries, 21st June. Inquiry ordered 23rd June. Proceedings pending.

131. *Frost*, of London, in collision off Texal, 25th May. Inquiry ordered 23rd June. Proceedings pending.

132. *Stornoway*, of Newcastle, stranded on Kentish Knock, 7th June. Inquiry ordered 23rd June. Proceedings pending.

INQUIRIES ABROAD.

155. *Twinkling Star*, stranded on Garden Island, 30th January. Inquiry held at Freemantle, before L. W. Clifton, Esq., and W. E. Marmion and W. Austin, master mariners. Master censured.

156. *Portmaise*, stranded on Masthead Island, 2nd February. Inquiry held at Queensland. Master in default. Certificate suspended for twelve months.

157. *Athenaise*, of St. John's, New Brunswick, detained at Naples, 1st April. Inquiry held at Naples before H. E. R. Thomson, W. Scott, and T. W. Karran, Esqs.

158. *Patrician*, of London, lost four miles off San Francisco Harbour. Inquiry held at San Francisco, before the Pilot Commissioners. Pilot's certificate revoked.

159. *Clarence*, s., lost. Inquiry held at Sydney. Master's certificate suspended for six months.

160. *Isa*, lost off Locotra, 3rd June, 1872. Inquiry held at the Aden Court of Criminal Jurisdiction. Master exonerated.

161. *Annie Benn*, of Cape Town, stranded at Point Danger, 26th November, 1872. Inquiry held at Mossel Bay, before the resident magistrate. Master exonerated.

162. *Wanja*, of Hong Kong, stranded. Inquiry held at Hakodate Consulate, before J. Troup, J. H. Reid, and A. P. Porter, Esqs. Master acquitted of bad navigation.

163. *George Reed*, of London, stranded at the Maldive Islands, 25th

September, 1872. Inquiry held at Galle, before H. W. Gillman, Esq., district judge, and D. Blyth, Esq., assessor. Certificates returned to master and mate.

Royal Navy and Royal Naval Reserve.

Abbreviations.—Ad., Admiral; A., Assistant; C., Captain; Cr., Commander; C. Chief; Cl., Clerk; Cn., Chaplain; D., Deputy; E., Engineer; F., Fleets; H., Hospitals; I., Inspector; L., Lieutenant; M., Midshipman; N., Navigating; P., Paymaster; r., Retired; S. L., Sub-Lieutenant; Sn., Surgeon; St., Staff; N. Inst., Naval Instructor; 1st Class A. E., 1st Class Assistant Engineer; 2nd Class A. E., 2nd Class Assistant Engineer; N. Ct., Naval Cadet; Ng. Ct., Navigating Cadet; R. N. R., Royal Naval Reserve.

Promotions.—**Ad.**—Sherard Osborn, C.B., F.R.S., 1855. **C. E.**—William Miller, 1864; William Castle, 1862. **D. I. G. H. F.**—William R. Dalton, *r.* **St. Sn.**—Leonard H. J. Hayne, M.D., 1861.

Appointments.—**Ad.**—Hon. Arthur A. L. P. Cockrane, C.B., 1870, to the Pacific Station. **C.**—William Codrington, 1869, to *President*, for Royal Naval Reserve; Thomas B. M. Sulivan, 1867, to *Malabar* (recommissioned); St. George C. D'A. Irvine, 1867, to *Euphrates* (recommissioned); Joseph E. M. Wilson, 1872, to *Repulse;* William E. Gordon, 1868, to *Jumna*. **Cr.**—Alexander P. Hastings, 1870, to *Pearl;* Frederick G. D. Bedford, 1871, to *Agincourt;* Charles C. P. Fitzgerald, 1871, to *Asia;* Cuthbert R. Buckle, 1869, to *Cracker*. **St. Cr.**—Philip Going, 1867, to *Asia*, for *Donegal;* James S. Watts, 1870, to *Bellerophon* (temporary). **L.**—James Evans, 1868, to *Implacable*, for *Lion;* Mountjoy Squire, 1872, to *Topaze;* Reginald C. Pole, 1866, to *Duncan;* Thomas G. Price, 1861, John H. O'Brien, 1867, Thomas B. Lacy, 1870, and Henry B. B. Beresford, 1872, to *Euphrates* (recommissioned;) Alfred J. Cheeke, 1859, to *Malabar* (recommissioned); William H. Roberts, 1872, Edward H. Gamble, 1872, William M. Annesley, 1868, Ronald R. M. Hall, 1872, Hon. Assheton G. Curzon-Howe, 1872, and John W. Harrison, 1868, to *Excellent;* Carleton Tufnell, 1872, Alexander J. M. Gardiner, 1872, Alexander J. Ballantyne, 1868, Frank A. Harston, 1868, and Claud Hardinge, 1869, to *Cambridge;* John Giles, 1872, to *Topaze;* Walter W. Poynder, 1863, to *Seaflower*, in command; William Wilson, 1867, to *Euphrates;* William F. Carslake, 1872, to *Vanguard;* Richard H. Byron, 1866, to *Hector;* Harry N. Lowe, 1872, to *Valiant* (additional); Edmund B. Wallace, 1872, to *Audacious* (additional); Charles R. C. Hamilton, 1865, to *Zephyr*, in command; George S. Deverell, 1872, to *Cracker;* Harry T. Grenfell, 1866, to *Repulse*, as Flag Lieutenant. **N. L.**—Henry Hosken, 1865, to *Pearl;* Henry W. Campion, 1871, to *Blanche*. **S. L.**—Peyton Hoskyns, to *Cracker;* Henry C. E. Harston, to *Challenger*. **S. L. R. N. R.**—Sydney R. P. Caines. **N. S. L.**—Charles K. S. Young, to *Coquette;* William J. N. Baird, to *Cracker;* Charles K. S. Young, to *Zephyr;* William

H. Maunsell, to *Coquette;* W. H. Petley, to *Ariel;* James E. Tally, to *Orwell.* **M.**—Cecil G. G. Boothby, 1869, to *Royal Adelaide.* **C. E.**—Robert C. Reynolds, 1861, to *Immortalité;* Thomas E. Miller, 1867, to *Asia,* for torpedo service; William Castle, 1878, to *Woodlark.* **E.**—James Torkington, 1867, to *Asia, for Thunderer;* Archibald Forrester, 1869, and Henry Scott, 1871, to *Clio* (additional) for disposal; George Lucas, 1862, Edward Chambers, 1867, and George J. Ross, 1872, to *Cracker;* Robert Glasspole, 1865, Philip Blanch, 1866, Henry G. Hayward, and John A. Rowe, 1868, to *Zephyr.* **2nd Class A. E.**—George Parsons, acting, 1872, to *Clio,* for disposal; James J. Milton, Robert Mayston, Thomas Soper, Cornelius Pitt, John W. W. Waghorn, George H. Baker, Samuel J. Robins, and Charles Rudd, acting, to H.M. Fleet. **Cn.**—Rev. J. Payton, to H.M. Fleet; Rev. R. H. Treffrey, M.A., 1873, to *Penelope;* Charles E. Hodson, M.A., 1872, to *Briton;* Frederick D. Barker, M.A., 1871, to *Resistance.* **2nd Class St. Sn.**—Doyle M. Shaw, 1862, to *Pembroke;* Henry Fegan, M.D., 1866, to *Devastation;* Gerald Molloy, 1867, to *Flora;* David Wilson, 1862, to *Favourite;* Edward J. Butler, M.D., B.A., 1870, and Charles J. Devonshire, M.B., B.A., 1869, to *Royal Adelaide,* for temporary service; Matthew Coates, 1871, and Samuel Bamfield, 1873, to *Royal Adelaide,* for temporary service; John Breakey, M.D., 1863, to *Flora,* for Ascension Island; John T. Gabriel, 1858, to *Boscawen.* **Sn.**—James A. Gaven, 1865, to *Antelope;* Hayman Thornhill, M.B., 1872, to *Pembroke;* William J. Volatti, 1872, to *Zephyr;* William R. White, B.A., M.B., 1871, to *Cracker;* Septimus Evans, 1867, to *Beacon;* Thomas F. Sparrow, M.D., 1872, to *Hercules.* **P.**—John Pooley, 1856, to *Audacious* (additional) for service ashore; Frederick O. L. Patch, 1864, to *Valiant.* **A.P.**—William J. Hubbard, 1868, to *Audacious;* Sidney W. Wright, 1872, to *Valiant.*

Retirements.—**C.**—Alexander Philips, 1866. **Cr.**—Edwin C. Symons, 1860, as Captain. **L.**—John N. Nugent, 1872; Charles A. Tucker, 1866; Edward Drummond, 1865, as Commander. **St. Sn.**—William G. J. Ayre, 1872; Henry Piers, 1868; Michael Walling, M.D., 1870. **2nd Class St. Sn.**—Thomas H. Taylor, 1864; Peter W. Wallace, M.D., 1865. **P.**—William Wallace, 1865. **A. P.**—Robert L. Harriet, 1862; Frederic W. Bottomley, 1868; William S. Gibbons, 1871; Thomas E. Semmens, 1864; Thomas Kains, 1869; Charles H. J. Collings, 1861.

Deaths.—**Ad.**—William Griffin, 1867, *r.* **C.**—Samuel Meredith, 1856, *r.;* Henry Kent, 1856, *r.* **Cr.**—Charles F. Burney, 1848, *r.;* William R. Payne, 1860, *r.;* Peter Barnes, 1854, *r.;* Auchmuty T. Freese, 1866, *r.* **Sn.**—Kents R. Risk, M.D., 1843, *r.* **P.**—Samuel Winter, 1846, *r.*

Maritime Law.

Marine Insurance.—Browning v. The Provincial Insurance Company.—On an appeal from the Court of Queen's Bench, Canada, relating to a policy of insurance effected on flour shipped from Montreal to St. John's (Newfoundland), it appeared that the vessel in which the flour was shipped was wrecked in the Gulf of St. Lawrence, and all on board were drowned. The vessel was subsequently found on the Island of Anticosti, and a portion of the goods recovered. The question raised was whether the plaintiff could recover $7,000 policy which was effected by an agent; and whether, as twelve months had elapsed since the loss, the action was maintainable. The decision of the Court of Queen's Bench in favour of the defendants was confirmed on appeal, and the plaintiff in the action now appealed to Her Majesty in Council. Their Lordships, in delivering judgment upon the two points raised, stated that they were in favour of the plaintiff, and would advise Her Majesty that the decrees of the lower Courts be reversed, and a verdict entered for the plaintiff for the amount claimed, with costs in both cases, and also the costs of the present appeal, adding the usual rate of interest according to the practice in the Canadian Courts.—Judicial Committee of the Privy Council, April 5.

Loss of Cargo.—The "John Clements."—The Portsea Gas Company v. Ransom.—In an action brought to recover damages for the loss of a cargo of coal, it appeared that the vessel which was loaded with the coal at Methil, a port in the Firth of Forth, foundered at sea in fine weather, eight or nine hours after she had started on her voyage. It was proved that the ship was seaworthy when she arrived at Methil, but had strained herself considerably while lying aground there during the time she was loading. The plaintiff contended that this damage was the cause of the loss, which probably happened through the starting of the planks, and that the loss was not, as suggested by the defendants, attributable to any of the excepted perils in the bill of lading. The jury were directed that, unless they adopted the defendants' suggestion, that the ship might have struck a sunken wreck, the presumption was that the loss was not by the perils of the sea. Verdict for the plaintiffs.—(Court of Common Pleas, Feb. 21.)

Lime Juice.—Scurvy.—Important Decision.—Police Court, Shanghai, March 26th. Before R. A. Mowat, Esq. The Chief Judge, and H.B.M. Consul were also on the Bench. "R. *v.* T. Colledge, master of British barque, *Kirkland*." The charge was as follows:—"You have this day been charged before this Court, for that you did, on leaving Sunderland, on the 29th August, 1872, bound on a voyage to Shanghai, neglect to carry on board the said vessel a sufficient quantity of sugar, calculated to last the said voyage, or that you did neglect to serve out

the same to the crew of the said vessel during a part of the said voyage; and for that you did fail during the said voyage to serve out to the said crew medicines, medical stores, and anti-scorbutics, in contravention of the 5th paragraph of the 4th section of the Merchant Shipping Act of 1867." After hearing the evidence, from which it appeared that the master did not serve out the lime juice daily on the voyage, and never looked at his medical guide at all, his worship proceeded to deliver judgment as follows:—"I have examined the Book of Instructions that the Act under which these proceedings are taken requires every ship to be provided with; and the result of the examination of it is only to confirm the impression I formed of the case at the hearing. I do not think it possible to conceive a case which could show more cruel indifference or criminal carelessness on the part of a master to the health or well-being of his men. I cannot imagine that the defendant desired to bring about the state of things that has been proved to have existed in his ship, but it is certain that, had he so desired, he could not have taken more effectual means to bring it about. I cannot listen to his excuse that the omissions were not wilful, for indifference and neglect may assume such proportions that in their results they are not distinguishable from the most deliberate and wilful acts inspired by malicious motives. To justify this strong language, I have only to refer to the facts, proven or admitted in the case, and to read some portions of the book I have alluded to, as showing the means of information the defendant possessed and neglected to use, and the precautions which he could have taken and neglected to take. The book, I should remark, is the captain's own copy, which he admits that he had never even read, though it has been in his possession for three years. To me it is almost inconceivable that a man in the defendant's position, who has a book of this kind supplied him for the express purpose of teaching him how best to keep his men in health and to restore them to health when they fall ill, at a time, moreover, when they have none to look to but him, should have let it lie unopened during all that period, and, in particular, should never have consulted it during any portion of that unfortunate time when only three men (and they sick) out of seven were left to navigate the vessel. How he can reconcile such conduct with the interests of his owner, and of the shippers of cargo in his ship, to say nothing of the higher claims of the health of his men, for which the law holds him in a great degree responsible, is to me utterly incomprehensible. The passages I refer to especially are in the chapter headed 'Prevention of Disease,' and which commences thus, 'Many diseases are much more easily prevented than cured. This is a fact that cannot be too forcibly impressed upon the mind of men who have the sole and entire charge of any community of human beings ashore or afloat,' there are found the following passages:—

(Page 5), 'Scurvy.—This disease must be prevented by constant care in the giving of lime juice. All vessels proceeding east of the Cape of Good Hope and west of Cape Horn should be furnished with a supply sufficient for at least twelve months. Make your steward mix it according to the following rule, and serve it out to each man at dinner every day.' (Page 6), 'You and your owners are responsible that a sufficient quantity is shipped; you are responsible that it is mixed properly and served out regularly day by day. If you do not serve it out, or see it served out, and the men become ill in consequence, you will be liable for the consequence of such illness, and also to a penalty.' Nothing can be more precise or explicit than these instructions. Again, on page 51, when scurvy has broken out, the directions are, 'Double the man's daily allowance of lime-juice, and give him any kind of vegetables, preserved or otherwise, that you have on board, with a liberal allowance of pickles, beer, or wine.' And, lastly, on pages 77-83, the new Act of Parliament, under which these proceedings are instituted, is set out *in extenso*, with the particular sub-section under which the defendant is charged printed in italics, in order to call special attention to its requirements. It is not necessary to recapitulate the evidence, as the defendant admits that he has contravened the provisions of the statute, and I have consequently only to consider the penalty that I should impose. The Act prescribes a penalty not exceeding £20 for each default in the matter of insufficient supply of lime or lemon juice, sugar, or anti-scorbutics, and a penalty of £5 for each failure to serve out the lime or lemon juice and sugar in the manner directed. The gross penalty is thus a very severe one, for it contemplates fresh penalties for every day when the provisions of the Act are not complied with; and it is right and proper that, for offences of this kind, which lead to the most disastrous consequences, severe penalties should be prescribed and, where prescribed, enforced. Under all the circumstances, I feel that I ought not to impose, in respect of all the offences charged in the summons, a less penalty than that of 160 dollars and costs."

SHIPPING AND MERCANTILE GAZETTE CORRESPONDENCE.

(Reprinted by special arrangement with Sir WILLIAM MITCHELL.)

CERTIFIED COPY OF SHIP'S REGISTER.—On attending at the Registry Office at Adelaide Place to-day for a copy of a ship's register, there is put before us a notice that any persons may inspect a ship's register on payment of 1s., but will not be allowed to take any copy. Office copies will be furnished on payment of 2s., and copies of transactions for 1s. additional. Can you reconcile this charge with the 107th clause of the 17th and 18th Victoria, cap. 104, which distinctly enacts that the Regis-

trar "is hereby required to furnish, to any person applying at a reasonable time for the same, a certified copy, upon payment of 1s. for each such certified copy."—Our Correspondent has only quoted so much of the 107th section of the Act as he supposes will support his case. He should, however, read the whole section, and also other sections. He will then see that the copy of a ship's Register, if supplied for evidence in a Court of Law, and for evidence in a Court of Law only, is to be supplied for 1s. by the Registrar of the port where the ship is registered. There is nothing in the Act requiring the Registrar General of Shipping and Seamen to supply copies of ships' registers at all, and certainly not for 1s. each.

Running Down Ships.—"An Old Fisherman" says, I sincerely hope you will advocate the insertion of a clause in the New Merchant Shipping Code, making it a criminal offence for any one attempting to wilfully desert another ship after collision. In addition to the valuable aids to to memory of the Rule of the Road at Sea already extant, I would suggest the following:—

Ahead you see an anchor light;
Then port or starboard—do what's right,
According to the wind and tide,
To pass in safety either side.
But if collision should ensue,
Then quickly summon all the Crew
To man the boats without delay,
And don't attempt to run away.

I scarcely need state, though there are many seafaring men who can neither read nor write, if the verse of a song that has anything to do with their business is repeated to them, they will think of it till their lives' end.—"An Old Fisherman" is referred to the leading article in the *Shipping and Mercantile Gazette* of Dec. 20, in which he will see that we have already advocated making the desertion of a sinking vessel a misdemeanour.

Child of the Ocean.—If a child is born on board a ship at sea—say, on a long voyage to some of the Colonies—to what country can that child claim to belong?—The parentage of the child would determine the nationality, and the country of its birth would be that of the flag of the ship on board which the infant was born.

Wages of Deceased Seamen.—A ship being lost at sea with all hands, is it not sufficient for the owners of the ship to pay the wages of the crew to their nearest relative, that relative being a mother; or what is the course for the owners to pursue, and what must a mother do to obtain her son's earnings up to the date of the ship being last heard of?—Under section 185 of the Merchant Shipping Act, 1854, a seaman's

right to wages terminates at the time of the loss of a ship. The payment of wages by a shipowner to the mother of a deceased seaman would not release him from liability in the event of the production of a will by any other lawful claimant. If a ship is wrecked and her crew drowned, the wages are to be treated as though the seamen died during the voyage—(*vide* Section 184). The wages due must be paid to a shipping master; and if the sum claimed does not exceed £50, the Board of Trade may, "if it thinks fit, deliver the said money to any claimants who can prove themselves, to the satisfaction of the said Board, either to be his widow or children, or to be entitled to the effects of the deceased under his will (if any), or under the statute for the distribution of the effects of intestates." The widow of a deceased seaman would be entitled to administer, and she would be the person who could legally claim the wages due. If the seaman be not married, and the mother is the nearest surviving relative, the wages would be paid to her. A shipowner should, therefore, pay over the wages to a shipping master, and the latter will give applicants a proper form to fill up and to get attested, in order to recover the sum lodged.

Drunken Engineers and Firemen.—I shipped my crew on Saturday forenoon last, with the understanding that they were to go on board at once, as I intended to proceed to sea the same night; but neither engineers, firemen, nor sailors came on board until yesterday (Sunday) forenoon, the two former helplessly drunk, so that the pilot and crew refused to proceed, consequently my vessel is detained until to-day (Monday) noon. Having by virtue of my charter to proceed without delay, please say if, after duly noting the above facts in my log, I can still proceed against these defaulters on my return to an English port after the present short voyage? It is a constantly growing evil that the men rarely turn up until the last moment before sailing, especially on a Saturday, which now appears to be considered a day of leave and licentiousness. Owners and masters in most cases condone these offences on account of the trouble, detention, and expense incurred by a prosecution, hence the evil is being aggravated. I hold it to be a duty incumbent upon those in command to punish such offenders when possible; and if owners and masters could and would do so in all cases, the evil would undoubtedly soon be stamped out.—The offenders, on the arrival of the steamer again in England, may be taken before the magistrates and punished for neglect of duty, disobedience of orders, drunkenness, and detention of the ship. See Section 263 of the Merchant Shipping Act, 1854.

Bottomry Bond.—My vessel left Leith Roads May 29, 1872, bound for Konigsberg with a cargo of pig iron. She sprung a leak in the North Sea, and on the 10th June encountered strong winds with heavy

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I scarcely need state, though there are many seafaring men who can neither read nor write, if the verse of a song that has anything to do with their business is repeated to them, they will think of it till their lives' end.—"An Old Fisherman" is referred to the leading article in the *Shipping and Mercantile Gazette* of Dec. 20, in which he will see that we have already advocated making the desertion of a sinking vessel a misdemeanour.

CHILD OF THE OCEAN.—If a child is born on board a ship at sea—say, on a long voyage to some of the Colonies—to what country can that child claim to belong?—The parentage of the child would determine the nationality, and the country of its birth would be that of the flag of the ship on board which the infant was born.

WAGES OF DECEASED SEAMEN.—A ship being lost at sea with all hands, is it not sufficient for the owners of the ship to pay the wages of the crew to their nearest relative, that relative being a mother; or what is the course for the owners to pursue, and what must a mother do to obtain her son's earnings up to the date of the ship being last heard of?—Under section 185 of the Merchant Shipping Act, 1854, a seaman's

right to wages terminates at the time of the loss of a ship. The payment of wages by a shipowner to the mother of a deceased seaman would not release him from liability in the event of the production of a will by any other lawful claimant. If a ship is wrecked and her crew drowned, the wages are to be treated as though the seamen died during the voyage—(*vide* Section 184). The wages due must be paid to a shipping master; and if the sum claimed does not exceed £50, the Board of Trade may, "if it thinks fit, deliver the said money to any claimants who can prove themselves, to the satisfaction of the said Board, either to be his widow or children, or to be entitled to the effects of the deceased under his will (if any), or under the statute for the distribution of the effects of intestates." The widow of a deceased seaman would be entitled to administer, and she would be the person who could legally claim the wages due. If the seaman be not married, and the mother is the nearest surviving relative, the wages would be paid to her. A shipowner should, therefore, pay over the wages to a shipping master, and the latter will give applicants a proper form to fill up and to get attested, in order to recover the sum lodged.

Drunken Engineers and Firemen.—I shipped my crew on Saturday forenoon last, with the understanding that they were to go on board at once, as I intended to proceed to sea the same night; but neither engineers, firemen, nor sailors came on board until yesterday (Sunday) forenoon, the two former helplessly drunk, so that the pilot and crew refused to proceed, consequently my vessel is detained until to-day (Monday) noon. Having by virtue of my charter to proceed without delay, please say if, after duly noting the above facts in my log, I can still proceed against these defaulters on my return to an English port after the present short voyage? It is a constantly growing evil that the men rarely turn up until the last moment before sailing, especially on a Saturday, which now appears to be considered a day of leave and licentiousness. Owners and masters in most cases condone these offences on account of the trouble, detention, and expense incurred by a prosecution, hence the evil is being aggravated. I hold it to be a duty incumbent upon those in command to punish such offenders when possible; and if owners and masters could and would do so in all cases, the evil would undoubtedly soon be stamped out.—The offenders, on the arrival of the steamer again in England, may be taken before the magistrates and punished for neglect of duty, disobedience of orders, drunkenness, and detention of the ship. See Section 263 of the Merchant Shipping Act, 1854.

Bottomry Bond.—My vessel left Leith Roads May 29, 1872, bound for Konigsberg with a cargo of pig iron. She sprung a leak in the North Sea, and on the 10th June encountered strong winds with heavy

trar "is hereby required to furnish, to any person applying at a reasonable time for the same, a certified copy, upon payment of 1s. for each such certified copy."—Our Correspondent has only quoted so much of the 107th section of the Act as he supposes will support his case. He should, however, read the whole section, and also other sections. He will then see that the copy of a ship's Register, if supplied for evidence in a Court of Law, and for evidence in a Court of Law only, is to be supplied for 1s. by the Registrar of the port where the ship is registered. There is nothing in the Act requiring the Registrar General of Shipping and Seamen to supply copies of ships' registers at all, and certainly not for 1s. each.

RUNNING DOWN SHIPS.—"An Old Fisherman" says, I sincerely hope you will advocate the insertion of a clause in the New Merchant Shipping Code, making it a criminal offence for any one attempting to wilfully desert another ship after collision. In addition to the valuable aids to to memory of the Rule of the Road at Sea already extant, I would suggest the following:—

Ahead you see an anchor light;
Then port or starboard—do what's right,
According to the wind and tide,
To pass in safety either side.
But if collision should ensue,
Then quickly summon all the Crew
To man the boats without delay,
And don't attempt to run away.

I scarcely need state, though there are many seafaring men who can neither read nor write, if the verse of a song that has anything to do with their business is repeated to them, they will think of it till their lives' end.—"An Old Fisherman" is referred to the leading article in the *Shipping and Mercantile Gazette* of Dec. 20, in which he will see that we have already advocated making the desertion of a sinking vessel a misdemeanour.

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sea, labouring heavily, keeping all hands at the pumps, maintopmast was carried away, wind S.E. We were obliged to bear up for Skallagras and come to anchor, then engaged a steamer to take the ship to Gothenburgh, in Sweden. We there discharged our cargo. The owner was on board the ship all the time acting as boatswain, and took all charge from me as regards repairing her, so I did not interfere. He employed Lloyds agent. The ship was repaired and ready for sea August 22 with a cargo of pig iron, but the owner had no money to pay the bills, and no means of getting away, and was obliged to mortgage the ship, cargo, and freight for £700 sterling, including interest and expenses, to be paid on ship's arrival at Konigsberg. The parties to whom the cargo belonged advanced the money. I objected to sign the bond, as I had nothing to do with the repairs of the ship, but at last signed it rather than detain the vessel. The owner first signed the bond, and I do not see why I cannot get my wages from those who hold the ship, or a part thereof, to keep us alive, for we have neither food nor fire on board, and no one will give us credit on either ship or owner. I have applied to the English Consul at Konigsberg, and he has written several letters to the court, but they will do nothing for us. The Consul has also written to the Board of Trade. He cannot do anything without their consent, and the owner has no funds, and it is very hard for us to starve, and having 8½ months' wages due. The articles were only for six months, but I had no money to pay off the crew, so I was obliged to keep part on board. The ship is advertised for sale on the 13th March, 1878. Cannot I then claim my provisions and wages up to the day of the sale? I have still charge of the ship, and no one wanted me to give it up. Can my wages be arrested, when the ship is sold, for either signing the bond, or for provisions supplied to the ship when she first arrived at Konigsberg, September 7, 1872?—By the Law Maritime a shipmaster has power to hypothecate ship, freight, and cargo, and is not personally liable for the execution of a Bottomry Bond under the circumstances stated. For necessaries and repairs the ship and freight can be hypothecated. As regards cargo, the master of a ship which put into Stromstadt, in Sweden, for repairs, was held bound to communicate with the owner of the cargo in this country, if in his power, before including the cargo in a Bottomry Bond. It is a sufficient communication if he puts the proprietors or consignees of the goods in possession of the facts which have occurred, and requests their instructions, or calls upon them to take measures for the protection of the property, and if they decline or neglect to protect their interest the Bond is valid against the cargo. (The Bonaparte, Admiralty Court, Dec. 31, 1852; judgment affirmed by Judicial Committee of the Privy Council, June 28, 1853. See report in the *Shipping and Mercantile Gazette*.) The landing

and reshipping the cargo comes into general average. Our correspondent has a claim on the proceeds of the ship for wages, and should take proceedings to recover the same in the Admiralty Court at Kongsberg.

ADVANCE NOTES.—We cashed four seamen's advance notes, which were to be paid three days after the vessel left the port, provided the men sailed from the port and were duly earning wages. The ship left on Sunday morning last, and on Tuesday night had to put into another English port in a sinking condition. On Wednesday we presented our notes, and were told the captain had telegraphed and stopped payment of them. All the men sailed in the vessel from the port, and were duly earning their wages up to the time of arrival in another port. The notes were duly accepted. Can we enforce payment for the said notes?—If the men were on board the vessel, earning wages, three days after the vessel left the port, the conditions of the contract were fulfilled, and payment would be due. The terms are that the men are to be "then duly earning their wages, or previously discharged with the consent of the master." If, however, the men deserted the ship, or were not earning wages, by refusal to work, on the third day, when they arrived in port, the notes would not be payable.

COAL CARGO.—I chartered my vessel to load a cargo of coals on the Tyne, the charter specifying regular turn to load. A remark was made in the shipper's office that a vessel was loaded in two days after she got to the shipper's wharf, and most likely that my vessel would get the same despatch. She was moored and ready to load at the shipper's wharf on the 12th inst. Days passed on, but no coals were forthcoming, so I called on the shipper to know when he would be able to load my vessel. His reply was that he would load when he liked. I afterwards learnt from my broker that my vessel was booked for twelve days' turn, with all Saturdays and Sundays cast out. According to that statement, I find the 28th of March terminates the lay-days. No coals forthcoming, I gave notice to the shipper, who said that I was greatly mistaken, and that the notice was of no value, as he never gave consent to loading my vessel. Coals are daily shipped at his wharf. Steamers to and from London have been loaded several times since I have been waiting here. How long can the shipper keep my vessel for 200 tons coals, and what step is best to be taken for a remedy? It appears that the shipper does not intend to load only when he pleases.—The ship is entitled to her regular turn, and if she does not get that turn the shipowner has a claim for breach of charter. It is a question, however, which our correspondent's letter does not clear up, as to whether the turn was to be a colliery turn—that is, to load according to entry in colliery book, and in accordance with the practice of pit owners, or entry in dock. The agreement itself must decide this. Detention beyond fourteen days is unreasonable.

JETTISON OF DECKLOAD.—A ship having been ashore, and compelled to throw her deckload overboard to enable her to get off, and the timber having been saved, what can be claimed?—The whole of the cargo having been saved, the freight would be due thereon, whether the timber was damaged or not, if carried to its destination; but if accepted short of its destination, there would be an inferential contract for the payment of *pro rata* freight.

GENERAL.

SAFETY-VALVE COMPETITION.—We are endeavouring to arrange time and place for conducting the final competition of the safety-valves of those competitors who have challenged "Virgo." We are in some doubt at present whether "Virgo" intends to send a valve in for actual trial. He appears to think that he is entitled to the prize on the provisional decision by which his drawing was selected. It must be distinctly understood, and we think all our correspondents will agree with us on the point that the actual trial, after challenge, and not the mere provisional selection of a drawing, will determine the prize, and as we are anxious to get rid of the money, we hope the trials will now be speedily arranged.

SUNDERLAND MARITIME EXHIBITION.—The committee of this exhibition have awarded to Mr. Clark S. Merriman a special gold medal for his life-saving dress, which has been fully illustrated and described in our pages, and a first prize to the patent cork mattress of Admiral Ryder, manufactured and exhibited by Messrs. Birt, of 4, Dock Street, London Docks.

PORT AT CUXHAVEN.—The scheme for creating a port at Cuxhaven suitable for the reception of large vessels, which has been so long talked of, seems now in a fair way of being actually carried out. A company has been formed for the construction of the necessary works, including a railway to connect the port with Stade—a town on the left bank of the Elbe, about half way between Cuxhaven and Hamburg—whence there is railway communication to all parts of Germany. The company asks from the State of Hamburg a subsidy of 60,000 florins for twenty years, a gratuitous grant of all Government land required for the works, and to be guaranteed the acquisition, by purchase, of whatever private property may be found necessary; and it seems probable that these terms will be conceded. Although a project of this kind was mooted so far back as 1858, jealousy on the part of the inhabitants of Hamburg has hitherto prevented its being carried into execution, as it was feared that a port at Cuxhaven would be injurious to the trade of the Elbe. This feeling still

exists, and, judging from the remarks of the *Hansa*, the concession above indicated will only now be made because it has become apparent that if the State of Hamburgh does not countenance this scheme, a somewhat similar one will be executed by a company supported by Prussia, in which case the trade of Hamburg would be most seriously injured, as every effort would be made to carry the traffic from Cuxhaven straight into the heart of Germany. For it is well known that Prussia is at present endeavouring to develope her maritime power. In connection with this subject it may be remarked that a Commission has recently been sitting at Berlin to consider the question of the lighting of the North Sea and Baltic coasts, which in many places is very defective.

New Steamers to South America.—The rapid increase of the South American trade, especially that with Chili, has induced the Ryde line to organise a new monthly steam service from London, Antwerp, and Falmouth to Rio Janeiro, Monte Video, and Valparaiso, *viâ* the Straits of Magellan. In consideration of the vessels calling at Antwerp the Belgian Government has granted the company a subsidy of £30,000. The first steamer of this line (the *Leopold II.*) left the Thames on June 10th. She is a splendid new vessel, built and engined by Messrs. Barclay, Curle, and Co., Glasgow. The following are her principal dimensions:—Length, 362 ft.; beam, 36½ ft.; depth, 28½; gross register tonnage, 2,700. She is entirely iron built, in six water-tight compartments, and classed A 100 at Lloyds. Her engines, of 400 h. p. nominal, drive a four-bladed 20 ft. screw, which propelled her at the rate of 14 knots on the measured mile. She has accommodation for 100 first-class passengers and 500 emigrants, and all her boats are fitted with Hill's self-detaching lowering apparatus. Messrs. Tod and Macgregor have on hand another vessel for the same line (the *Santiago*); and Messrs. Laing, of Sunderland, have orders for others to follow.

Boys for the Navy.—As 500 boys were this year struck out of the Navy Estimates it is now unnecessary to enter so many recruits as formerly. Accordingly, the power of finally accepting boys for the Navy has been taken out of the hands of the recruiting officers of Marines and of the Coastguard, and the only officers now authorised to enter boys are the captains of training ships, district ships, drill ships, flagships at Sheerness and Queenstown, *Fisgard* at Greenwich, and *Nankin* at Pembroke. The rules as to qualification are now very stringent, and they will be most rigorously enforced. The medical examination, in particular, is ordered to be very searching, and the physical standard exacted, both as to height and chest measurement, is such that it will now be impossible for any but strong, healthy, well-developed lads to pass muster. It is, therefore, confidently expected that the annual waste of boys, through their breaking down in training, will be now greatly reduced.

PRIZE SAFETY-VALVE COMPETITION.—FURTHER CHALLENGE.—"Q. E. D." states his intention to submit one of his valves for actual trial, and challenges the decision of the umpires.

PLIMSOLLISM.

WE reproduce the following observations from the *Shipping Gazette*, which we think quite worthy of a permanent record in our pages :—

Shipowners, as a class, were never so maligned as they have been during the last few months. The storms of the autumn and winter, which caused so much destruction to life and property at sea, seem to have shipwrecked the common sense of persons who had previously some reputation for worldly sagacity. The great fire at Chicago overwhelmed thousands in ruin, and made havoc among the Fire Insurance Companies; but the gales which commenced to blow at the end of September, and continued their intermittent fury so long, appear to have created a public panic, and raised an indiscriminate cry against the entire body of shipowners. Mr. Plimsoll took advantage of the disasters due to the violence of the winds and waves to get up a sensational movement, and he has so far succeeded in his efforts as to obtain the appointment of a Royal Commission. He is determined, however, if he can, to force premature legislation, and cut the ground from under the feet of the Commissioners. With the composition of the Commission no fault can be found, except that the interests, more especially of the owners of unclassed ships, have not been adequately represented. There would be no difficulty in getting doctrinaire Commissioners to demand the exclusion of all vessels from the coal trade whose bottoms were not coppered, and their hulls and rigging kept man-of-war fashion, or even like yachts. They would not condescend to ascertain whether coal-laden vessels had or had not to take the ground, on discharging, with their cargoes on board; or what would or would not suit the purposes of such a trade. We say that men could be got together who would vote for such a supervision of shipping as to leave nothing to supervise. If legislators, like Mr. Plimsoll, could have their way, the coasting and home trades would be so thinned as to destroy the Royal Naval Reserve by sending the coasting seamen away from the United Kingdom. The bulk of coasting sailors know the character of the vessels they serve in, and can leave their employment whenever they please. These men know what a shipowner can or cannot afford to do to keep his ship going, and they are not so stupid as their advocates take them to be. Let Plimsollian enactments drive a few hundred collier vessels out of the trade, and a reaction would set in, through the displacement of large numbers of

seamen, which would completely astound the promoters of these ill-conceived and impolitic measures.

Among the denouncers of shipowners in Parliament was Mr. Samuda, who compared the Cunard Line of steamers, and the ships of Messrs. Wigram and Green, with those of all other classes. This is like taking the standard of race horses for that of dray horses. Mr. Samuda tells a very pretty story of an "unscrupulous" shipowner. He said that about the end of the Crimean war, a shipowner applied to two shipbuilders to build him a vessel of 1,200 tons. The war having closed, the owner of the new ship, who, we suppose, accepted the lowest of the two estimates, was compelled to send his vessel to a foreign port on a low freight. After leaving port, the ship got on a sandbank and went to pieces. The unsuccessful shipbuilder said to the shipowner, "You had better have had mine;" and, says Mr. Samuda, "he replied—'Oh, no; I had better not; for if I had a ship built by you it would never have gone to pieces. As it is, I have the insurance on the ship and the insurance on the freight.'" This sort of stuff was uttered in the House of Commons, and patiently listened to! No one called for names, nor asked who the disinterested shipbuilder was who would or could have built a ship of 1,200 tons that would not go to pieces on a sandbank, with a heavy cargo in her, and the hull exposed to the sea. Mr. Samuda ought to be asked to produce the owner and the builder of the ship he alludes to before the Royal Commission, and then we may, perhaps, learn that there is another side to the question. Then, again, with regard to Insurance. Is it possible that individuals can really mean what they say when they deliberately propose to abolish altogether the system of Marine Insurance.*

There was a general annual meeting at Lloyds last week, and the question of the proposed inquiry into losses at sea was mooted by Mr. Michael Wills, who justly and pertinently commented upon the subject of the investigation when he said:—

"As one of the classes of the community interested in this question—and which I believe this room is anxious to further—I say that the indictment made by Mr. Plimsoll is not an indictment against shipowners only, it is an indictment against the whole nation. As regards the supposed charge against shipowners, I really throw that to the wind. I say that shipowners, as a body, are no more concerned in it than underwriters."

These remarks are quite to the purpose, but Mr. Plimsoll will not wait to hear what an impartial inquiry, conducted by a Royal Commission, may elicit, so he lays a Bill before Parliament to strangle the

* As to the *impossibility* of limiting insurance, we refer our readers to the able remarks contained in the pamphlet we have reprinted, showing "how shipwrecks happen, why they happen, and how to prevent them."

shipowner without a trial. He asks the House of Commons to have all British ships surveyed and marked by a load-line; but foreigners may trade to our ports without such surveys. These surveys are to expire two months before the time specified in the certificates, so that British ships will be kept in port, and British seamen denied a living, while foreigners carry off the trade. We cannot believe that a British House of Commons could be prevailed upon to pass such a measure; if they were to do so, the State would soon be imperilled.

MR. PLIMSOLL'S BILL.—PETITION OF STEAM SHIP OWNERS.

THE following is a copy of a petition of steam ship owners:—"1. That a Bill has been introduced into your Honourable House, entitled, 'A Bill to provide for the Survey of certain Shipping, and to prevent Overloading;' by which Bill it is proposed, amongst other things, to require that, with certain exceptions, every ship shall be surveyed before going to sea, and that the load line of every ship shall be fixed by reference to a certain table appended to the said Bill, and painted on the side of the ship.

"2. That your petitioners' association consists of and represents the steam ship owners of the port of Liverpool, and also the great majority of the owners of steam vessels trading to and from that port. The number of gross registered tons of steam shipping belonging to the members of the association, or which they directly represent as agents, is about seven hundred thousand, being, as your petitioners believe, about one-third of the entire steam trade of the United Kingdom.

"3. That your petitioners have observed with much satisfaction that a Royal Commission has been appointed to take evidence, and report upon the subject of unseaworthiness of ships, and trust that when that Commission has fully investigated the subject, and reported to your Honourable House, it will be practicable so to legislate as to do something effectual towards preventing vessels going to sea in an unseaworthy state; but your petitioners, feeling that very great difficulties surround the subject, and that the proper mode of remedying the evil is far from being so clear as the existence of the evil to be remedied, earnestly deprecate any attempt at legislation until the said Commission has reported.

"4. That it appears to your petitioners that the said Bill, now before your Honourable House, is not well suited to meet the requirements of the case, and that its provisions, if carried into effect, would, in many cases, grievously hamper honest shipowners, and interfere with legitimate trade.

"5. That the principle of subjecting every vessel to Government survey is one which should not be adopted without the fullest consideration, for,

while it might, in certain cases be a protection to seamen and the public, yet there is much reason to apprehend that in many cases such survey would be simply delusive, and that it would act in all cases in a very mischievous manner, as a transfer of responsibility from the shipowner to the Government.

"6. That, although there can be little doubt that vessels have, in many instances, been sent to sea in an unseaworthy state, and that a case for public investigation by Royal Commission has been fully made out, yet it is almost as certain that in the course of the recent public agitation on the subject many exaggerated statements have been made, and that the practical difficulties of the subject, and the best mode of remedying the evils which exist, have not been sufficiently considered. Your petitioners, therefore, humbly consider that the matter is not yet ripe for legislation.

"Your petitioners, therefore, humbly pray your Honourable House not to allow the said Bill, or any Bill upon the subject to which it relates, to become law until the Royal Commission shall have made their report, and that upon such report being made, your Honourable House may be pleased to legislate in such form as may be then seen to be appropriate to the circumstances of the case as they may then be made, And your petitioners will ever pray, &c."

All bodies of shipowners are sending in petitions in the same sense.

TIME POLICIES OF INSURANCE.

As instances of the very interesting and peculiar questions which sometimes arise in connection with policies of marine insurance, by time, we quote the following cases which have been sent us by an occasional correspondent:—

A vessel sails for Quebec, insured on a time policy, which expires during the voyage, on a given day, at midnight. On that particular day, shortly after midnight, in the meridian of Greenwich, the vessel is lost, but in the Gulf of St. Lawrence, in about 45° of west longitude. The question is, is the vessel lost within the terms of the policy, or not?

If the time specified in the policy is meant to be Greenwich time, then there is, of course, no loss on the policy, for the policy has expired, the vessel being lost after midnight. If, on the contrary, the policy of insurance, which covers the vessel, is to follow the vessel, and is to be governed by the time at ship, wherever she may be, then, of course, there is a loss within the policy, for she was lost before midnight, by ship's time.

This case was recently tried, and the jury decided that the vessel was

lost within the terms of the policy, the time at ship being declared to be the time which decides the question, in the absence of any particular time being specified to the contrary.

It would, of course, be easy for the underwriter to protect himself from a question of this kind arising, by inserting the words "Greenwich time," in the policy of insurance, or if the vessel mentioned in the body of the policy be trading locally, at some distance from the United Kingdom, as, for instance, in the China Seas, or on the coast of India, or between India and Mauritius, then the words, "Hong Kong time," "Madras time," &c., might with advantage be used; for, to the underwriter, it settles the question and prevents litigation, and eliminates the element of uncertainty surrounding the last twenty-four hours of a time policy. For it may be taken for granted that if the vessel were lost in 165° of east longitude, the assured would try to make out that the time at the place where the policy was effected, was what was in the mind of the contracting parties, and not some other unknown time, which might vary to the extent of twenty-four hours, according as the vessel is in east or west longitude. Again, if the vessel be an English vessel, insured on a time policy, at, for instance, San Francisco, what time is to define the moment at which the policy expires?

We, therefore, think that we raise a useful question, in suggesting that the time at some particular place should be inserted in a time policy, and that that time should be "mean time."

Another case of a somewhat different nature has lately arisen, and is still undecided.

A vessel sails for the west coast of South America, insured on a time policy, which expires during the voyage. She never arrives at her destination, and, in course of time, is posted as a missing ship. She was, however, spoken in about 3° of south latitude, in the Atlantic, on a day which still left fifteen days of her policy to run. Is this vessel lost within the terms of the policy or not?

We understand that this case will be decided by arbitration, and it evidently is a very proper way of settling the question, for it is difficult to conceive what evidence there can be on either side, except extracts from the logs of other vessels, and then who is to say where the missing vessel was on any day after she was last sighted? The whole question is governed by the doctrine of probabilities.

We are not aware that any arbitrator has at present been named, and and as we have no intention or desire to prejudge the case, we will drop the subject, only trusting that the arbitrator will be able to perfectly satisfy both sides, and find a way out of a difficulty which, on the face of it, appears to be as intricate a question as any we have heard propounded for some time.

ORIGINAL PROBLEMS.

To the Editor of the Nautical Magazine.

Bristol, 4th June, 1873.

DEAR SIR,—The following little problem requires a knowledge of the simplest elements of algebra, and if you think it suitable for your pages, I give it for the benefit of our young nautical students.—Yours truly,

NAUCLERUS.

I am at anchor on a coast trending east and west. There is a current setting fairly down the coast (east), and bearing due east from my own there is a friend's ship. I wish to ascertain, by taking my gig and a patent log, and pulling down to her and back:—

1. The rate of my gig's pulling.
2. The rate of the current.
3. The distance between the two ships.

I am 1 hour 20 minutes pulling down, and the log registers 6′.

I am 2 hours 40 minutes pulling back, and the log now registers 18′, that is 6′ down, and 12′ back.

ANSWER TO PROBLEM (CORRECTED) IN JUNE NUMBER OF "NAUTICAL MAGAZINE."

Mr. W. M. Norbury, whose work is beautifully neat, has fallen into the error of the printer, and taken 50° ½′ as the value of the greater angle instead of 50° 30′, the correct value: he is otherwise correct. But adopting 50° 30′ as the correct value of the greater value, and going over the calculation again, by the same method, we have

R 50° 30′ cotan	9·916104	D 43° 17′ cot.	10·026040	Q 46° 10′ cot.	9·982309
	2		2		2
cotan²	9·832208	cot.²	10·052080	cot.²	9·964618
A 20	1·301030	d 30	1·477121	A + d 50	1·698970
13·58	1·133238	33·82	1·529201	46·09	1·663588

$\overline{A + d}$. $A\,d = 50 \times 20 \times 30 = 30000$

$$x = \sqrt{\frac{30000}{13{\cdot}58 + 33{\cdot}82 - 46{\cdot}09}} = \sqrt{\frac{30000}{1{\cdot}31}} \qquad 30000 \qquad \begin{array}{r} 4{\cdot}477121 \\ 0{\cdot}117271 \\ \hline 2\,)\,4{\cdot}359850 \\ \hline 2{\cdot}179925 \end{array}$$

$x = 151{\cdot}3$

10

Total length of Mast 161·3 feet below the surface.

Another Method.

From Hutton's Mathematics, by Rutherford, page 619 (13).

$$\text{Sin. } \theta = \text{cosec. P. sin. R.} \sqrt{\frac{d}{A} \cdot \text{sin. } \overline{Q+P} \cdot \text{ sin. } \overline{Q-P} \cdot \text{ cosec. } \overline{R+Q} \text{ cosec. } \overline{R-Q}}$$

$$x = \text{sin. Q. sin. R. cot. } \theta \sqrt{\text{d. } \overline{A+d} \cdot \text{ cosec. } \overline{R+Q} \text{ cosec. } \overline{R-Q}}$$

$\overline{Q+P}$	89° 27′	sin.	9·999980			
$\overline{Q-P}$	2 53	sin.	8·701589			
$\overline{R+Q}$	96 40	cosec.	002947			002947
$\overline{R-Q}$	4 20	cosec.	11·121715			11·121715
d	30		1·477121			1·477121
A	20	en comp.	8·698970		50	1·698970
			2)20·002322			2) 4·300753
			10·001161			2·150376
P	48° 17′	cosec.	163925			
R	50 30	sin.	9·887406			9·887406
θ	27° 36½′	sec.	10·052492	cot.		281521
Q	46 10	sin.				9·858151
						2·177454

150·47
10
160·47
161·30 by the 1st method.
·83 difference.

By reworking the 1st method, but with greater precision, it gives us a result 150·5, differing only ·08 from the above.

See Rutherford's remarks on this Problem, page 620 of his work.

THE

NAUTICAL MAGAZINE.

NEW SERIES.

AUGUST, 1873.

IDENTITY OF SHIPS.

"What's in a name? That which we call a rose,
"By any other name would smell as sweet."—SHAKSPEAR.

"No rechristening of a ship should be allowed under any circumstances."—SAMUEL PLIMSOLL, First Book, p. 55, l. 29.

THERE is much in a name, especially in the name of a ship, and more especially if the ship has a bad character, or has been unfortunate. Under the present law no British registered ship can change her name without the written authority of the Board of Trade; and this authority is by no means an easy thing to obtain in the majority of cases in which it is applied for. Mr. Plimsoll, amongst other things, has urged in his remarkable book that change of name should not be allowed. In this Mr. Plimsoll probably had, as in other cases, overlooked or ignored the provisions of the recent Merchant Shipping Act. The law, even before the passing of the recent Act, provided that no change should be made in the name of a British registered ship, but it did not require a foreign ship when placed on the British register to be placed there with the name if any she may have previously borne as a British ship; and thus it came to pass that if the owner wished the name of his British ship to be changed to some other name he would sell her to a foreigner and buy her back again rechristened. This led to some ships

having, during their career, many names, for the sale to a foreigner and the repurchase by a British owner could be repeated once a day if the parties desired it. There were certain foreign persons who used to get a part of their livelihood by buying British ships for rechristening—perpetual godfathers for ships in want of names. The change made by Mr. Fortescue's Act of 1871 requires first that if a British ship is sold to a foreigner, and repurchased by a British subject, she shall come back in her own name, and that no change of name shall be allowed without special license. The only case not met by the present law is the case of a foreign ship coming on the British register for the first time. As the law now stands, she may throw aside her foreign name and may, without license or advertisement, take any name her owners give her. This is, however, prevented by Mr. Fortescue's Bill now before the House, and a foreign ship coming on the British register for the first time will, after the passing of that Bill, have to come with her foreign name.

Mr. Plimsoll either did or did not know the state of the law when he dedicated his book to Her Most Gracious Majesty. If he did not know it, then his recommendation that no change should be made in the name of a British ship was a year or so too late. If he did know it, and wanted and still wants something more inelastic than is provided in Mr. Fortescue's Act and Bill—if, for instance, Mr. Plimsoll wishes that no change shall be made in a name, even by license, or, as he says, under any circumstances, he wants what is against common sense, and what, therefore, it is for the benefit of British shipping he should certainly not get.

It must not be forgotten that the practice of certain firms and certain lines calling their ships after certain things, animals, rivers, countries, nationalities, professors, &c., is a practice to be encouraged; nor that any hard or fast law that would unduly interfere with this must be bad. In addition to the instances we give below, we may mention lines whose ships are all named after some tower. The *Ferntower*. The Cunard ships end in "ia," as *Parthia*, *Russia*, *Abyssinia*, *Scotia*, *Persia*, &c. The Allan line in "ian," *Canadian*, *Circassian*, and so on. The ships of Messrs. Lamport and Holt are named after astronomers, *Newton*, *Donati*, *Beila*, *Flamsteed*; whilst Messrs. Burns, of Glasgow, affect the names of wild creatures, *Lynx*, *Bear*, *Bison*, *Kangaroo*, &c. Promiscuous ships are named anyhow, such as *Saucy Lass*, *Black Joke*, *Auld Reekie*, *Blue Nose*. There are about 100 *Ann's*, and upwards of 900 whose names begin with *Mary*. In foreign ships we find many names wholly unpalatable to the English notion for ships. We don't call our dogs, horses, or ships by scriptural names as a rule; but in Catholic countries it is the reverse, and yet we buy foreign ships. Now, for Messrs. Lamport and Holt to become possessed of say a *Saucy Lass*, or

a *Black Joke*, would be wholly out of the question and wholly improper amongst the astronomers of their line, or again for a *Blue Nose* to appear with the *Bear* and *Jackal*, or with the *Persia* and *Parthia*, or with the *Constance*, the *Victoria*, and *Euphemia*, would be equally ridiculous and inconvenient.

Suppose that Mr. Inman sells an Atlantic steamer to Mr. Ismay —or Mr. McIver sells one to Mr. Inman, or that the Guion line sell one to the National—each of these lines crosses the Atlantic from Liverpool, and each has a class of names, and Mr. Inman's are all "Cities;" Mr. Ismay's all end in "ic." Suppose then that the *Rustic* or the *Sarcastic* is bought by Mr. Inman, it would be absurd to require Mr. Inman to keep the name of a competing line in his fleet, and would lead to confusion. His request, therefore, to change the name of the *Sarcastic* to the *City of Upton* would be perfectly reasonable, and ought to be allowed in the absence of special reasons to the contrary. Again, Spanish and Italian ships have often very holy appellations: *Holy Virgin*, *Immaculate Conception*, *The Twelve Apostles*, *The Holy Ghost*, are all actual names of existing ships. Now, it would be exceedingly unpalatable to Englishmen to have these ships, if transferred to the British registry, going over the world with these names, and they ought therefore to be renamed. Again, a sloop of 60 tons or thereabouts, called "*The Annan and Whitehaven and Londonderry Trader of Whitehaven*," suffers under a name too heavy, and also too long to write on the hull in letters of the size now required. In fact, the name would go right round her. To change the name of the little craft to the *Alert*, or *Gem*, or *Cat*, is only reasonable. Again, *The Devil* is not a nice name for a British ship, except on the ground of the antiquity of the founder of the name; but the owner being possessed of *The Devil*, and finding her a good honest ship, wished to give her a better name and applied, and was allowed to call her *The Printer's Boy*. In this case, Mr. Fortescue explained in the House that it was not until *The Devil* was found to have a character wholly unimpeachable that she was christened as *The Printer's Boy*. How Mr. Plimsoll, as the author of those touching appeals to the majesty of Heaven and of the Throne can object to changing the name of a ship under *any* circumstances it is not easy to see. We say that for anyone to commence a crusade against any change of name whatever, is to run counter to the necessities of British commerce, and public feeling and decency. Having shown the necessity for changing names under certain circumstances, and under proper restrictions, we propose to give a few illustrations of the inconvenience of promiscuous changes of names without the official sanction and publication, and notification, and advertising required under Mr. Fortescue's Act of 1871. These cases are interesting,

first, because of the many changes, and, secondly, because of the intricacies involved by the lengthenings, and shortenings, and quarterings; and we have no hesitation in publishing them, because there never has been any suspicion of fraud or improper concealment in any of the cases, and because we believe the whole of the transactions to be fair, honest, and above board. We must, however, bear in mind that they are all impossible under the last Merchant Shipping Act.

The first case is that of the *Brazilian*, of Liverpool.—This ship was built at Millwall in 1852, and registered in London as the *Adelaide*, in December of that year. She was "sold to foreigners," 1863, and again registered in London as the *Mersey*, on the 30th May, 1863; she was again sold to foreigners, and registered in London, 28th April, 1864, as the *New York;* she was again sold to foreigners, and registered in London, 2nd September, 1864, as the *Brazilian*. She was transferred to "The Merchants Trading Company, Liverpool," lengthened 100 ft. in Liverpool, and re-registered at that port on the 29th October, 1869. Since 1869 she has been trading to India and the Mediterranean, and is at present lying in the Birkenhead Float to have new engines and boilers. She has proved to be a strong ship. Her old engines were "compounded" by Jack, of Liverpool, and a new description of boiler fitted to her from the drawings and under the superintendence of Mr. John Jordan, of Liverpool.

(2.) *Bolivian*.—She was built at Millwall, 1853, and registered in London as the *Victoria*, on the 8th April, 1853; she was sold to foreigners, and registered in Liverpool as the *Shannon* on the 4th June, 1863; she was again sold to foreigners, and registered in Liverpool as the *London*, on the 28th April, 1864; she was again sold to foreigners, and registered in London as the *Bolivian*, on the 9th March, 1864, and, after registry, she was sold to "The Merchants Trading Company," of Liverpool, and placed on the Indian trade. She was considerably altered in appearance under the direction of Mr. John Jordan; she was cut in dry dock at Liverpool, and drawn asunder 90 ft., with the intention of lengthening her, and remained in that state for ten months, when she was again put together without any additional length. Since then she was sold, and is at present lying in the roads at Charlton to be broken up.

(3.) *Lark*.—A paddle steam ship, 210 ft. long, 23 ft. broad, and 10 ft. 4 in. deep, of very light plates and scantling, built of steel, supposed for blockade purposes, and registered in Liverpool as the *Lark*, sold to foreigners, and registered in Liverpool as the *Port Said*, having been lengthened 60 ft., 8th December, 1869, registered owner John Rowe Bickford, Liverpool; again sold to foreigners in 1870, and registered at Liverpool as the *Hankow*, 14th March, 1870, again owned by John Rowe Bickford; re-registered at North Shields, 8th March, 1872, owned

by John Robert Kelso, of North Shields. Since then she has been cut in two, at Sunderland, by the late Mr. William Pile, in January, 1873, and converted into two screw steam ships, by putting a new stern on one, and a new bow on the other—one, the *Lilian*, registered at London on the 26th April, 1873, as a NEW IRON SCREW steam ship, built by W. Pile and Co., at Sunderland, in 1873; the other is, we believe, at present lying in dock, and in the market for sale, but we cannot yet find any record of her being registered. Both vessels we found classed 75 A. After the vessel was bought by John Robert Kelso, of North Shields, she was, in accordance with the custom in such cases, reported as having been broken up in 1872, and her registry as the *Hankow* closed in the official books on the 24th September, 1872.

(4.) *Badger.*—This is a paddle steamer, 208 ft. 8 in. long, 24 ft. 3 in. broad, and 11 ft. 6 in. deep. This vessel was built at Liverpool, in 1864, by Jones, Quiggan and Co., registered 29th March, 1864, as owned by Joshua Jones, shipbuilder, Liverpool; she was sold to foreigners, repurchased, and registered at Nassau, N.P., 16th May, 1865, owned by Richard Etheridge, of London, then residing in Havana. She was transferred to Liverpool, still registered as the *Badger*, 30th May, 1866, owned by Charles Kuhn Prioleau, of Liverpool. She was again sold to foreigners, 7th December, 1869, lengthened in Liverpool 60 ft., and registered as the *Ismaila*, of Liverpool, John Rowe Bickford, owner.

(3 and 4.) The *Lark* and *Badger* were lengthened, and intended to carry cargo through the Suez Canal, on this side the Isthmus and the other. The *Ismaila* was again sold to foreigners, in 1870, and bought again, and re-registered, at Liverpool, as the *Shanghai*, still owned by John Rowe Bickford, of Liverpool. She was transferred to North Shields, 11th March, 1872, owner, John Robert Kelso, of North Shields. The *Shanghai* is now lying at Sunderland, and would, we have heard, have been cut, and converted into two vessels, in the same manner as the *Lark*, had Mr. Pile lived.

(5.) The *Black Diamond*, a steamer, was cut into two; her engines were sent to work at a colliery; a bow was put into one half, and a stern on the other half, and she appeared as two sailing schooners. Which of them was *the Black Diamond?*

(6.) A vessel was lengthened, then, some time afterwards, declared by her owners to be broken up, and the registry closed. She was not broken up, but rebuilt, leaving the bow entire, and was registered as a new ship, and was, we learn, classed.

(7.) *Tiber*, a steamer, belonging to Messrs. Bibby, of Liverpool, got on the banks, and broke in two. She was lifted in separate parts, and sold on the beach, at Egremont, by auction. Separate purchasers bought her; one bought the aft end, and one the fore end. The pur-

chaser of the after end wanted a bow, and he bought a slice off the piece which belonged to the other purchaser, and put it on; thus making a shorter ship than the old *Tiber*. This will, undoubtedly, be hailed with delight by persons who object to lengthening ships, but see no objection to short ships.

We have been informed of other cases of which the particular feature is as follows:—A is built, say, 200 ft. long; B is built, say, 200 ft. long. A becomes C, and is lengthened 60 ft.; B becomes D, and is lengthened 80 ft. A, B, C, and D then are cut up, and, with new work, made into three new ships, E, F, G. Now, the puzzle is here to know how much of old A, B, C, and D, and new E, F, and G = A, or B, or C, or D. But the question is, whether it is necessary that any one should know? Doubtless the ships would get a class, and, probably, a Board of Trade certificate, and if they do not obtain either, they are but little better, or little worse, than they would be without it. The question is, how much of the materials of an old ship may be used in making a new one, and we think that as this must depend upon the condition of the materials of the old ship, it is better to leave the question alone. When a knife, which we will call A, has had all its blades renewed, and then its handle renewed, and all its springs renewed, it may be a very good knife, and its parts, taken separately, may go to assist in making very good knives, but they cannot all go by the name of the original knife; and so with ships, and it is a matter for purchasers, and insurers, and register books, and surveyors to take each complete one as it stands on its own merits as presented.

As regards ships broken up, or taken off the register, we observe a clause in Mr. Fortescue's new Bill, which provides that such a ship shall not be re-registered until she is surveyed by a Board of Trade surveyor, and pronounced to be seaworthy.

The alteration in the name of a ship is practically prevented, unless with due formalities and advertising, and the end of an old ship is now reported, and we think that anything further than this would become vexatious interference.

ON SOME RESULTS OF WEATHER TELEGRAPHY.

By Robert H. Scott, F.R.S., Director of the Meteorological Office.

(Reprinted by special permission from the "Quarterly Journal of the Meteorological Society" for July, 1873.)

The popular idea of Weather Telegraphy appears to be that reports from a number of outposts are received at a central station, and that the person charged with the duty of discussing the information is able to deal with the collection of observations so received with the same confidence as if he had taken the readings himself and had a perfect knowledge of the entire character of the weather at each locality. It is hardly requisite to remark that the above is very far from being the real state of the case. The reports are necessarily sent in a condensed form in order to save expense, and the choice of situation of the several stations has been, perforce, ruled by many considerations besides mere suitability for affording unexceptionable information.

In this latter connexion I may mention that we have found that if a telegraphic observer has not a fair amount of constant telegraphic work to do he will very probably neglect his meteorological duties. Thus we have had to give up certain stations, as Portrush, because the reports were constantly bad, owing to the incorrigible idleness of the observer. The very best stations we have are those which are also signal-stations for the Mercantile Marine Code, where the observer is on constant duty, day and night, on an exposed part of the coast.

This necessity of choosing stations shows us that the position of the instruments is seldom entirely satisfactory, and that the reports of wind and sea are often untrustworthy for certain points of the compass.

Even though the information were sufficient, both in quantity and quality, to give us a good idea of the instrumental readings over the country, it is quite impossible to get a complete account of the general condition of the weather at each place in a telegram short enough to be transmitted at a fair cost.

Again, it is needless to say that more frequent telegrams are required; and here, again, is a source of expense. In fact, the idea of a constant watch to be kept at all the more important stations is simply impracticable on the ground of cost.

The regular weekly interruption of our weather study on Sundays is a most serious matter for the perfect efficiency of our system; but as long as the post-office arrangements for Sunday remain unchanged it appears needless to insist on attendance at the office on that day, when the results of our studies could not be transmitted to the parties interested in obtaining them.

In the United States the system of Weather Telegraphy is conducted on a far more extensive scale than in these islands; while we, for our part, are far in advance of all other European States. The signal office at Washington receives 3 reports a day at equidistant hours from about 80 stations; while we have, or should have, did the reports arrive punctually, 46 reports in the morning and 9 at 2 p.m. It is a fair question whether or not the cost of the American system as compared with our own is not excessive. The grant from Congress to their service is $250,000 for last year; while we spent hardly one fourteenth of that sum—viz., £4,000.

I have not yet alluded to one of the most serious obstacles to the development of a perfect system of Weather Telegraphy. This is the frequency of telegraphic errors. In this connexion I do not merely speak of the foreign reports; for the Society can easily understand that a report from Corunna, passing through French and English offices, where the clerks are innocent of Spanish, is often all but unintelligible. It is the errors in our own reports which are the great trouble to us. Of these errors, great and small, there were, during the year 1872, about 300 which were traced, though we did not formally report more than one fifth of this number, to the post-office by letter. Many of these errors arise from the fact that our code consists mainly of figures in the transmission of which mistakes are especially likely to arise. These mistakes in telegraphy, as well as the delays in transmission, are, unfortunately, more frequent at a period when the weather is disturbed than in time of calm; so that at the very moment that we are most in want of full information it is all but impossible to obtain it.

As an instance, admittedly a very exceptional one, I may cite the storm of February 6, 1870, the very day before which the transfer of the telegraphic business to the post-office took place. *On February 5 we received by telegraph no p.m. reports at all!* We are unavoidably liable to a breakdown of nearly equal gravity whenever a serious storm, such as the snowstorm of February 2, 1873, sets in. For these defects, caused by *force majeure*, we cannot attach any blame to the telegraphic authorities.

Before leaving this part of the subject it may be well to place on record my conviction that it *is absolutely necessary that the reporters shall be under the direct control of the central discussing station*. Where this is not the case, as in some foreign countries, it has been found that the duty of reporting is not properly attended to, and in some cases there is great difficulty in having defective instruments replaced by good ones.

Admitting, however, that we possess a reasonable number of well-equipped stations, a good staff of observers, and that we enjoy a moderate freedom from telegraphic errors, the fact still remains that we have in

these islands the most exposed district in Europe, except, perhaps, the north-west coast of Norway, and that we must do the best we can.

The idea of mooring ships or large buoys off our western coasts to form advanced posts of observation may be given up as sufficiently chimerical, at least until it has been proved to be practicable. It is an acknowledged principle with the Trinity House and the other two Lighthouse Boards, that no lightship or lighthouse can, with safety to life, be placed in any situation where it cannot be visited once a week at the least. It may safely be said that a vessel moored 100 or even 50 miles west of the Fastnet could not have been visited more than once or twice during the two months succeeding the middle of November last.

The idea of obtaining information from the United States is nearly equally visionary; for the whole phenomena of the storms change their character entirely in travelling over any considerable portion of the earth's surface.

Recently, the Portuguese meteorologists, at the suggestion of Professor Buys Ballot, have proposed to furnish observations from the Azores as soon as a cable shall have been laid from that group of islands to the mainland. This question was discussed at some length at the meeting of the British Association at Edinburgh in 1871; and the Council of the Scottish Meteorological Society, in their report to the general meeting, July 4, of the same year, stated, "There is no country which would benefit so much by this intelligence as Great Britain."

It being of great importance to test this statement thoroughly, I have requested Mr. Strachan, one of our Fellows, to compare the curves of daily readings from Angra do Heroismo and Valencia for the space of 2½ years; and I append his Report:—

"*Inquiry into the connexion of Atmospheric Disturbances at Valencia and Angra do Heroismo.*

"I have examined the diagrams of the barometer, prepared from observations made at Valencia and Angra during 1870, 1871, to the end of June 1872, and have counted 66 well-marked depressions or *minima* at Valencia, of which, apparently, 7 were shown two days before at Angra, 9 one day before, 5 on same day, 9 one day after, 6 two days after, 7 three days after, while 23 were not indicated there. As regards the well-defined elevations or *maxima* which ocurred at Valencia during this period of 30 months, of which I have counted 45, apparently 8 were shown one day before at Angra, 8 two days before, 1 three days before, 8 on same day, 6 one day after, 4 two days after, 1 three days after; 13 were not indicated, and for one there was no comparison from hiatus in record.

"Thus out of 111 cases, it appears that only 28 were possibly

indicated at Angra before, and as many as 33 after, they happened at Valencia.

"For the purpose of forewarning of British weather, any indications to be obtained from Angra ought to be from two to three days in advance; but it appears from this inquiry that such indications would only amount to 10 per cent. of the required number, and these of more or less doubtful precision. Instead of this comparison being favourable to Angra, as on outpost for indications of approaching weather for Western Europe, the result is altogether negative.

"It should also be remarked that the range of the barometer at Angra is seldom so large as at Valencia, and that some disturbances occur at Angra which are not apparent at Valencia.

"I have not been able to carry out any satisfactory comparison of the winds at these two stations. For such a purpose it would be better to represent the observations of the wind's direction and velocity by traces, in the same manner as for the barometer, instead of showing them by feathered arrows, as in the present diagrams.

"R. STRACHAN.

"1873, 2, 12."

From this it is evident that there is, *primâ facie*, no reason for expecting that reports from the Azores would be of any service to us as giving direct intelligence of storms which are advancing on our coasts. In fact, as already noticed by Captain Toynbee in the "Barometer Manual," p. 31, there seems some reason to think that the trajectories of storms over that part of the Atlantic are directed from north-west to south-east. (See *Nautical Magazine*, 1872, p. 145.) It may be of interest to the Society to know that when the communication with the Azores has been established we shall receive the reports, and shall, undoubtedly, derive considerable benefit from the daily knowledge of the conditions of pressure and wind over the district in which they are situated, though we shall not be actually warned for storms.

As regards our system of reports and warnings it is undeniable that our telegraphic code is more complete and satisfactory than any other in Europe, inasmuch as, besides giving the rainfall and hygrometric information, it enables us to make a barometrical chart for 6 p.m. with nearly the same accuracy as that for 8 a.m.

As to the warning messages to the coast stations they are necessarily very concise. Any idea of telegraphing gradients, or even barometrical readings, to uneducated fishermen at the present day, bears on the face of it unsuitability to the requirements which the warnings are mainly intended to meet, whatever hopes we may cherish of the future enlightenment of our sailors. It is true that at some stations, such as Whitby, the

telegrams received are regularly discussed by the fishermen with the view of eliciting from them the extent of danger to that part of the coast; but it is very seldom that such trouble as the above is taken.

The mode of conveying the information to the public is a matter which requires serious attention. On the one hand we must be careful not to interfere with existing signals for harbour purposes, and on the other we must provide that the signals are sufficient to indicate our meaning.

Admiral FitzRoy's use of the drum and cones has, in my opinion, been rather misunderstood by myself as well as other people. The two cones indicated equatorial or polar *gales* respectively, while the drum indicated "*stormy winds* from more than one quarter successively." As far as I can learn, the Admiral did not neccessarily mean *a storm* by the words *stormy winds;* he originally considered the drum as a signal for coasters and small craft, while the cones were employed to announce danger for larger seagoing ships. In the woodcut of the signals, however, the signification of the drum is given as "*gales successively.*"

It is well worth considering whether or not such a system is desirable. One serious difficulty with which we have to contend is that the hoisting of any signal is too often taken as an excuse by seamen for refusing to go to sea; so that the shipowners, as a body, protected by insurance, do not care for our signals. Had we a graduated system of signals we should certainly issue warning messages more frequently, and the complaints of interference with navigation would be more serious, besides the danger of too often repeating the cry of "Wolf!" "Wolf!" In fact, in the opinion of many men who are well competent to judge, and are not shipowners, such as our lamented Honorary Member Commodore Maury, our warnings should only be issued when a storm of exceptional violence is expected. In answer to this suggestion I shall only say that we shall be heartily glad when the pefection of our theoretical knowledge enables us to form, beforehand, a reasonably correct anticipation of the violence of any great number of our storms.

The only country in which Admiral FitzRoy's signal system is now employed is Portugal, where the authorities resolved to adopt it just at the time when it was given up in this country.

As is well known, the meaning of our present signal is that a telegram has been received, and every one must go to learn what the news is.

Two plans have been proposed for conveying the intelligence to ships passing or at anchor, as at the Downs or in Yarmouth Roads. One was devised by my colleague, Captain Toynbee. It consisted of a semaphore with two arms, one to show the part of our coast on which a storm was blowing, and the other to show the direction of the wind. This system was tested during the year 1868 at Blackwall, Liverpool, and North

Shields; but it was not found advisable to adopt it, as the seafaring public would not take the trouble to understand it.

The other plan has been employed in Holland for several years, and by it the direction and amount of the most important gradient is shown. The instrument is called the Aëroklinoscope, and consists of a bar slung by the centre like a ship's yard, but capable of being turned in any azimuth and of being peaked to any angle. The practical difficulty in the use of this plan is that it is very hard to read it if you do not face it exactly, for you cannot be quite certain which end of the arm is the nearer to you.

My own impression as to the form of signal is, that we shall probably either abide by the drum, or revert to the use of the drum and cones in a signification somewhat similar to that which they had in Admiral FitzRoy's time.

While speaking of the mode of giving intelligence to seaports I may be allowed to make some remarks on the difficulty of issuing warnings to collieries at any reasonable expense. Our office has been considered to have taken up this question in 1868, and then to have let it drop. The real reason that it was let drop was that the Home Office declined to take any part in the issue of such intelligence; but even if the Government had given their sanction to the plan it would have been a costly proceeding to carry it into execution, owing to the fact that no signals could be used, the collieries being spread over a wide tract of country in each district.

I now come to the comparison of the telegraphic intelligence issued by us with the facts observed; and this is not so easy a matter as it seems. In fact the attempts which we made to obtain a record of weather from the coastguard stations showed us how unsatisfactory had been the tests applied to Admiral FitzRoy's system. We found that reporters at adjacent stations constantly contradicted each other as to the hour of commencement, and even the direction and force of the gale. This was chiefly owing to the difference between the exposures at the several stations. Thus while a southerly gale was blowing at Holyhead, a place like Conway, under the lee of high land, enjoyed a moderate breeze.

I need not here enlarge further on my remarks at the last meeting on the difficulty of drawing conclusions as to the force of the wind at sea from observations made at land observatories. It is evident, therefore, that the greatest care is requisite in order not to arrive at false results.

In former statements of the results of the warnings we may say, speaking *very generally*, on the one hand, that favourable results were found whenever it was considered that the occurrence of a storm at one station on a coast-line justified the warning; and on the other, that unfavourable results were obtained whenever it was considered that if

there was one station on the coast-line where the gale did not occur the warning was a failure.

It is evidently hopeless to reconcile such very different conceptions of the mode of testing. For our part we have considered that the existence of a gale on a coast-line required evidence from two independent stations, and as we have not got such stations on the north-west coast of Ireland and the west coast of Scotland, we have excluded those districts from our consideration.

Condensed tables for the last three years, by which the first has already been printed in the form of a Parliamentary Return show, in the first two years, a percentage of gales foretold of 46, and in the year 1872 this rises to 61. In each year there are about 20 per cent. of warnings which were justified by the occurrence of strong winds, though not by gales: these we count as successes, and thus the total percentage of success in the three years respectively is 68, 63, and 80. This last figure is slightly higher than that which was obtained in the office for Admiral FitzRoy's warnings, and, of course, far higher than that given in the Report of the Committee appointed to consider the condition of the office on Admiral FitzRoy's death.

The signal office of the United States claims 76 per cent. of success for its warnings; and I think that we may say that our result for last year of 80 per cent. of storms and strong winds occurring after the hoisting of the drum is a fact on which we have just reason to congratulate ourselves.

It should be remembered that in analyzing the reports "all observations of the wind in which the force exceeded 7 (a moderate gale), or the velocity exceeded 40 miles an hour, have been quoted as instances of the occurrences of a gale; but it has not been considered that the drum was hoisted *late* or was *hauled down too soon*, unless the force of 9 (a strong gale), or the velocity of 50 miles an hour, was reached *prior* to the issue of the order to hoist or *subsequent* to the issue of the order to lower."

In the summary all cases in which the signal has been shown to be partially late by one single report of force 9, or of the velocity of 50 miles, have been specially noted in the remarks, and marked with a *p*.

All telegrams which were late, owing to the intervention of Sundays or telegraphic errors, are marked with *s*.

OUR GREAT PORTS.

Hull.

There are few ports in the world so noted as Hull. From the boy, who pores over Defoe's immortal work, and learns therein that Robinson Crusoe's father was a Bremen gentleman of the name of Kreutznaer, and first settled at the great port of the Humber, to the student of English poetry, who gleans from Chaucer, that the "Hulle" of the "Canterbury Tales" produced "schipmen," there is a genuine interest started in it. So far back as the time of King John, it was deemed the third port in the kingdom—a distinction it still justly claims, for the amount of value attached to the imports and exports combined. The ancient name appears to have been Wyke, but, in 1296, Edward I. bought it, and thenceforth it was called "King's-Town," or, modernly, Kingston-upon-Hull, being situated on the banks of the stream of that name, near to its junction with the Humber. Its convenient position for defence or offence was, no doubt, the reason why the quick-witted "Longshanks" fixed upon it as a "King's Town" or military centre. Mr. C. Frost, F.S.A., in his "Early History of Hull," states it was a place of great mercantile importance for a century previous to its purchase by Edward, and that in the fifteenth to the eighteenth years of his reign the duties on exports amounted to one-seventh of those of the entire kingdom. Its royal patron granted a charter to it, and made it an independent manor. In the year 1299 a harbour was formed there; and seventeen years later a ferry was established up the Humber to the town of Barton. Ten years later, the town was fortified, and its gratitude was nobly manifested to the grandson of its benefactor by assisting him, in the war against France, with sixteen ships manned by four hundred and sixty-six mariners. The magnitude of this contribution can be better understood when it is remembered that London only sent twenty-five vessels. In the general history of the nation, Hull is recorded as having been faithful to the Lancastrians during the "Wars of the Roses," and as having withstood a long siege on behalf of the Parliament against Charles I. In 1541, Henry VIII. paid a visit there, and afterwards extended the fortifications. During the Civil War, Hull became a depôt for military stores, of which it contained a more extensive supply than the tower of London at that period. It was commanded, on the first breaking out of that unhappy strife, by Sir John Hotham, who only seems to have distinguished himself by his pusillanimity and treachery in negotiating with the king for the surrender of the place, and ever hesitating to carry out the dark project. The king appeared in person, on the 23rd April, 1642, expecting the

place to be given up to him; but the governor would not do so, because of the trust reposed in him by the Parliament, but at the same time protesting his loyalty to the House of Stuart. The siege was not raised till the following July, when the king's forces were dispersed by a desperate sally of the garrison, led on by Sir John Meldrum, who had arrived in the meantime to assist the governor. Another siege was begun next year, but was also successfully repelled by the inhabitants under Lord Fairfax. As a compensation for their heavy losses, the citizens asked to be relieved of the assessment to public duties; but they were quickly told that, in time of public war and general calamity, no relief could be afforded to their particular griefs.

Although Hull had more or less flourished for centuries, as a trading community, it was not till after the time of Charles II. that its commercial facilities began to be rightly developed. Its situation particularly favours the expansion of trade with the German and Baltic States. So far back as 1589, the whale fishery was commenced, when two vessels were fitted out and sent to Greenland. This trade has continued with varied success; but, since 1819, it has been in a declining state. In some years of the present century as many as sixty ships have been employed as whalers. In connection with this trade, it is a singular fact to note that the town was formerly paved with Iceland stone, brought to the port by those vessels as ballast.

But the most important era in the commercial history of the place was when the Dock Company was projected. A meeting was held at the "Albion Tavern," Aldersgate Street, London, on the 21st May last, to celebrate the centenary of this company. Wilberforce was one of the promoters of it; and, in 1774, an Act of Parliament was passed authorising the "old" dock to be constructed. The first stone was laid on the 19th October, 1775, by Joseph Outram, Esq., the Mayor, and the undertaking was completed, under the superintendence of Luke Holt, Esq., resident engineer, from the plans of John Grundy, Esq., C.E., in the year 1778. The same spirited company have from time to time, as the increase of trade required it, built other docks, until now there are six in all, having a total water area of 84 acres. They have also promoted and obtained another Act this session to spend, if required, £600,000, in building warehouses, and otherwise improving their dock property, for the accommodation and further development of the port.

Before following up the statistics about the docks, shipping, &c., it may be as well to state that there are other ports on the Humber, besides Hull, which deserve a short notice; and had it not been for those rival ports, the one founded so long ago, by Edward I., would probably have been nearly as extensive as Liverpool, in its shipping, at the present time. Those ports are Grimsby, Goole, and Gainsborough. The latter

is of very little extent as to its commerce; but of Goole it is said that, in 1828, its establishment as a port had caused the commerce of Hull to decline considerably, in that and subsequent years. But the port of Grimsby, which has risen of late years with immense strides, has curtailed the business of the opposite side of the river to a large extent. This place has no *parvenu* existence. It traces its annals back to that "landmark"—so to speak, in maritime history—the siege of Calais, where it furnished to Edward III. an armament of eleven vessels and 170 men. Subsequently, its harbour became dammed up with mud, and its commerce almost disappeared, till, at the beginning of the present century, efforts were made to restore it. Now it is possessed of nearly as much dock space as Hull, and the traffic appears to be increasing with rapid pace. The following statistical statements will best show the comparative position of Hull and the other Humber ports, with reference to each other, and to themselves, at different periods.

The main particulars regarding Hull docks are as follows:—

Year Opened.	Name.	Width of Entrance.		Water Area.		Lineal Quayage.	
		Ft.	In.	Acres.	Yards.	Miles.	Yds.
1778	Queen's Dock	38	0	10	1542	0	1135
1809	Humber Dock	41	6	9	4356	0	781
1829	Prince's Dock	35	6	6	151	0	490
1846	Railway Dock	42	0	2	3902	0	480
1853	Victoria Dock	50	0	30	1300	0	1514
1869	Albert Dock	80	0	28	4719	1	520
	Total.....			78	1450	3	1340

NOTE.—Other water space of locks, &c., not included, bring the total up to 84 acres, "water area."

The Grimsby docks comprise the following:—

Year Opened.	Name.	Width of Entrance.		Water Area.		Lineal Quayage.	
		Ft.	In.	Acres.	Yards.	Miles.	Yds.
1801	Old Dock	36	0	19	0	Chiefly private	
1852	Royal Dock—						
	Large Lock ...	70	0	25	0	0	1070
	Small Lock ...	45	0				
1852	Fish Dock	20	0	12	0	0	300
1852	Tidal Basin	200	0	15	0	0	0
	Total ...			71	0	0	1370

Of the ships registered, there were at—

	1846.		1872.	
	Vessels.	Tons.	Vessels.	Tons.
Hull	468	68,521	700	173,194
Grimsby ...	86	1,321	414	28,925
Goole	463	28,585	423	28,398
Gainsbro' ...	16	930	20	949

It is interesting to note in this table how, during the last quarter of a century, those two ports, which are situated so many miles higher up the river than the other two, have remained almost stationary, whilst the others have made immense strides forward. The same feature may be observed, more or less, in the statements below.

The coasting trade, inwards, score the following figures :—

	1849.		1871.	
	Vessels.	Tons.	Vessels.	Tons.
Hull ...	1,634	171,109	1,061	147,054
Grimsby	124	7,029	152	6,731
Goole ...	2,250	141,107	1,461	123,620
Gainsbro'	294	16,199	110	5,802

The same trade, outwards, is as follows :—

	1849.		1871.	
	Vessels.	Tons.	Vessels.	Tons.
Hull ...	1,778	174,867	1,550	253,665
Grimsby	124	7,798	250	34,962
Goole ...	2,523	133,728	1,526	131,476
Gainsbro'	488	27,194	204	9,655

The colonial trade, inwards, shows these results :—

	1849.		1871.	
	Vessels.	Tons.	Vessels.	Tons.
Hull ...	109	42,395	46	27,728
Grimsby	19	6,053	10	7,453
Goole ...	Nil.		7	1,655
Gainsbro'	Nil.		Nil.	

The same trade, outwards, displays :—

	1849.		1871.	
	Vessels.	Tons.	Vessels.	Tons.
Hull ...	64	29,046	54	27,279
Grimsby	5	2,268	9	7,889
Goole ...	Nil.		5	1,096
Gainsbro'	Nil.		Nil.	

is of very little extent as to its commerce; but of Goole it is said that, in 1828, its establishment as a port had caused the commerce of Hull to decline considerably, in that and subsequent years. But the port of Grimsby, which has risen of late years with immense strides, has curtailed the business of the opposite side of the river to a large extent. This place has no *parvenu* existence. It traces its annals back to that "landmark"—so to speak, in maritime history—the siege of Calais, where it furnished to Edward III. an armament of eleven vessels and 170 men. Subsequently, its harbour became dammed up with mud, and its commerce almost disappeared, till, at the beginning of the present century, efforts were made to restore it. Now it is possessed of nearly as much dock space as Hull, and the traffic appears to be increasing with rapid pace. The following statistical statements will best show the comparative position of Hull and the other Humber ports, with reference to each other, and to themselves, at different periods.

The main particulars regarding Hull docks are as follows:—

Year Opened.	Name.	Width of Entrance.		Water Area.		Lineal Quayage.	
		Ft.	In.	Acres.	Yards.	Miles.	Yds.
1778	Queen's Dock	38	0	10	1542	0	1135
1809	Humber Dock	41	6	9	4356	0	781
1829	Prince's Dock	35	6	6	151	0	430
1846	Railway Dock	42	0	2	3902	0	480
1853	Victoria Dock	50	0	30	1300	0	1514
1869	Albert Dock	80	0	28	4719	1	520
	Total.....			78	1450	3	1340

NOTE.—Other water space of locks, &c., not included, bring the total up to 84 acres, "water area."

The Grimsby docks comprise the following:—

Year Opened.	Name.	Width of Entrance.		Water Area.		Lineal Quayage.	
		Ft.	In.	Acres.	Yards.	Miles.	Yds.
1801	Old Dock	36	0	19	0	Chiefly private	
1852	Royal Dock—						
	Large Lock ...	70	0	25	0	0	1070
	Small Lock ...	45	0				
1852	Fish Dock	20	0	12	0	0	300
1852	Tidal Basin	200	0	15	0	0	0
	Total ...			71	0	0	1370

Of the ships registered, there were at—

	1846.		1872.	
	Vessels.	Tons.	Vessels.	Tons.
Hull	468 ...	68,521	700 ...	173,194
Grimsby ...	86 ...	1,321	414 ...	28,925
Goole	463 ...	28,585	423 ...	28,398
Gainsbro' ...	16 ...	930	20 ...	949

It is interesting to note in this table how, during the last quarter of a century, those two ports, which are situated so many miles higher up the river than the other two, have remained almost stationary, whilst the others have made immense strides forward. The same feature may be observed, more or less, in the statements below.

The coasting trade, inwards, score the following figures :—

	1849.		1871.	
	Vessels.	Tons.	Vessels.	Tons.
Hull ...	1,634 ...	171,109	1,061 ...	147,054
Grimsby	124 ...	7,029	152 ...	6,731
Goole ...	2,250 ...	141,107	1,461 ...	123,620
Gainsbro'	294 ...	16,199	110 ...	5,802

The same trade, outwards, is as follows :—

	1849.		1871.	
	Vessels.	Tons.	Vessels.	Tons.
Hull ...	1,773 ...	174,367	1,550 ...	253,665
Grimsby	124 ...	7,798	250 ...	34,962
Goole ...	2,523 ...	133,728	1,526 ...	131,476
Gainsbro'	488 ...	27,194	204 ...	9,655

The colonial trade, inwards, shows these results :—

	1849.		1871.	
	Vessels.	Tons.	Vessels.	Tons.
Hull ...	109 ...	42,395	46 ...	27,728
Grimsby	19 ...	6,053	10 ...	7,458
Goole ...	Nil.		7 ...	1,655
Gainsbro'	Nil.		Nil.	

The same trade, outwards, displays :—

	1849.		1871.	
	Vessels.	Tons.	Vessels.	Tons.
Hull ...	64 ...	29,046	54 ...	27,279
Grimsby	5 ...	2,268	9 ...	7,389
Goole ...	Nil.		5 ...	1,096
Gainsbro'	Nil.		Nil.	

The foreign trade, inwards, records these figures:—

	1849.			1871.		
	Vessels.		Tons.	Vessels.		Tons.
Hull ...	2,393	...	399,240	3,371	...	1,161,119
Grimsby	147	...	30,319	1,311	...	352,705
Goole ...	324	...	31,545	359	...	72,445
Gainsbro'	59	...	7,654	6		667

The same trade, outwards, shows:—

	1849.			1871.		
	Vessels.		Tons.	Vessels.		Tons.
Hull ...	1,786	...	304,759	2,857	...	1,017,179
Grimsby	37	...	9,704	1,437	...	424,630
Goole ...	103	...	13,786	330	...	69,802
Gainsbro'	14	...	1,733	5	...	416

Of the coal exported, there were:—

	1862.	1871.
From Hull	192,641 tons.	350,594 tons.
,, Grimsby ...	86,435 ,,	282,228 ,,

The Customs' duties collected were:—

	1858.	1870.
At Hull	£282,387	£295,107
,, Grimsby	38,607	93,253

In examining the latter figures, it ought to be borne in mind that since 1858, upwards of 400 articles have been transferred from the "dutiable" to the "free" list in the tariff.

The population returns display a marked degree of increase—

	Hull.	Grimsby.
1831	32,058 persons	—
1841	65,670 ,,	—
1851	84,690 ,,	12,263 persons.
1861	97,661 ,,	15,060 ,,
1871	123,111 ,,	26,496 ,,
1872	128,125 ,,	—

The receipts and expenses for the docks at Hull were as follows:—

	1871.	1872.
Receipts	£150,488	£179,601
Expenditure	116,390	124,261
Dividend	1 per cent.	6 per cent.

The increase of tonnage for last year, as against the previous one, was 171,840 tons at the docks. The pressure of traffic was so great in the autumn, about the time of the dispatch of the latest steamers for the Baltic, that a complete "block" occurred on the quays and the streets adjoining the docks. The allegation of one party is, that there is not sufficient railway accommodation; and the assertion of another body is, that the dock room is not enough. Be this as it may, an application has been made this session for powers to construct a railway and tunnel to connect the south side of the Humber with that of the north. It is called the "Hull South and West Junction Railway." The only line which runs directly into Hull at present is the North-Eastern, and, as the docks at West Hartlepool belong to that company, and, since their creation, have taken a great part of the timber trade from Hull, it is considered that a feeling of partiality must exist in favour of the former, and to the latter's detriment. Besides, the ferry which, for many years, has done good service between Hull and New Holland, so as to connect the Lincolnshire side to that of Yorkshire, is now entirely inadequate to the greatly increased and increasing traffic. The proposed line will therefore give the required accommodation. It will, in an independent manner, connect the Humber ports with all the great railway systems south-west of them, and especially that of Hull. This, of course, will have the effect of forming another communication with the manufacturing districts. It will also place the coalfields of Nottinghamshire, and the ironstone lodes of Lincolnshire, in direct contact with Hull. The engineer is Mr. Fowler, C.E. He estimates the line to cost £960,000, and the tunnel £310,000. The latter will be 2,840 yards long, and will be placed 7 feet below the bed of the river. By the pneumatic process, it is considered that it can be completed in two years and a half; and it is to be formed of two tubes, so that the trains can pass independently, which plan will facilitate the ventilation to a great extent by forming currents of air each way. The preamble to the Bill passed the Committee of the House of Commons on the 22nd May last; and, doubtless, the carrying out of the scheme will develope the trade, and benefit the district to a marvellous extent. It is anticipated that an injury will be done to Grimsby, by facilitating the traffic to Hull; but it is more than probable that a reciprocal benefit will the rather be established, such as has been experienced in a smaller degree by the ferry. The expansion of the traffic with the Baltic and North Germany has been so large within the last decade that something more than the Bills which have been introduced this session will be required, should the increase continue, which is likely enough. The increase of steam communication alone therewith has been threefold in tonnage in ten years, and 70 per cent. in value. The total import and export values at Hull were £13,000,000 in 1861;

whereas, in 1872, they amounted to £22,000,000, being nearly doubled. The imports consist of corn, seed, timber, oil, hemp, and other products of the Baltic and Continental ports. The exports comprise coal, machinery, and all sorts of textile fabrics from the Yorkshire and Lancashire manufacturing districts. In former days the imports were chiefly wine and timber; and the exports mostly consisted of wool, woolfels and leather. Besides exporting the products of the surrounding districts, the town of Hull itself makes no mean display as a producing community. There are extensive shipbuilding yards, engineering establishments, oil and seed mills, cotton mills, also manufactories of turpentine, tar, white lead, soap, tobacco, sails, ropes, chain-cables, &c. Sugar refining, and the brewery businesses, are carried on to some extent. Mr. Reed, late Chief Constructor to H.B.M. Navy, has commenced shipbuilding at Hull on a large scale, and is building both ironclads for the work of war, and merchant ships for the more peaceful and profitable labours of commerce.

The number and tonnage of vessels built on the banks of the Humber last year were as follows:—

Hull ...	18 sail. ves....	1,738 tons.	17 steamers	...	12,970 tons.
Grimsby	19 ,, ...	1,194 ,,	1 ,,	...	60 ,,
Goole ...	8 ,, ...	458 ,,	Nil.	...	Nil.
Gainsbro'	7 ,, ...	523 ,,	Nil.	...	Nil.

The number in course of construction at the 31st December, 1872, were:—

Hull	10 sailing vessels ...	1,014 tons.
,, ...	32 steamers	29,633 ,,
Grimsby..	6 sailing vessels ...	433 ,,
,, ...	1 steamer ...	200 ,,

The docks at Hull are of a somewhat peculiar appearance, inasmuch as they seem to intersect the town, giving a sort of amphibious character to it. They enter the place at one part and come out at another, forming a series. The latest constructed, however, departs from this plan, having been formed along side the Humber, and, probably, future extensions will follow the same course. The cost of these large works amount to the enormous sum of £2,200,000. As already stated, they are the growth of exactly one hundred years. The old dock was commenced in 1774, and finished in 1778; the Humber dock was begun in 1803, and finished in six years. At the opening of this dock the famous Charles James Fox and Lord Nelson were present. The Prince's dock was granted powers in 1802, but was not commenced till 1826. It was completed in three years. The railway dock took two years to complete, from 1844. The Victoria dock was not finished till 1853, although begun

in 1845. The largest one—the Albert—was commenced in 1861, and completed for opening in 1869, when the Prince and Princess of Wales were present. The engineers have all been first-class men; amongst them were Rennie, Walker, Hartley, and Hawkshaw.

The dimensions of these structures may be summarised thus :—

Name.	Length.	Breadth	Depth on Cills.		Width of Bridges.	Area of Quays.
			Springs.	Neaps.		
	Feet.	Feet.	Ft. In.	Ft. In.	Ft. In.	Sup. yards.
Queen's Dock	1,703	254	20 6	15 0	23 0	18,163
Old Dock Basin.....	211	80	...	...	...	...
,, Lock.....	121	38	...	...	...	...
Humber Dock	914	342	26 6	21 0	25 0	17,639
,, Basin	258	434	...	...	...	8,419
,, Lock	158½	41½	...	...	...	...
Prince's Dock	645	407	20 6	15 0	24 0	15,643
,, Lock	120	35½	...	...	...	...
Railway Dock	720	165	26 6	21 0	25 0	10,865
Victoria Dock	1,800	378	27 6	22 0	25 0	19,428
,, Basin (No. 1)	154	130	...	...	..	19,420
,, ,, (No. 2)	319	141	...	...	...	
,, ,, (No. 3)	289	422	...	...	...	
,, ,, (No. 4)	318	348	...	...	...	
,, Lock (No. 1)	172	45	...	...	...	...
,, ,, (No. 2)	120½	50 & 32	...	...	...	...
Albert Dock.....	3,420	300	28 6	23 0	15 6	108,844
,, Basin	658	320	...	...	...	...
,, Lock	320	80	...	...	...	...

When they were first formed the Crown granted the site of the military works for the purpose, and the Parliament of the day voted a sum of £15,000 towards defraying the expense of them. This ancient town seems ever to have been a place of marked interest for the governing powers of the country. Thus, Edward I. bought it, Henry VIII. built its fortifications, and, what is more, granted a bishopric, so that it might be represented fairly in the church militant. The Commonwealth furnished it with large supplies. Charles I. paid court to it. The Parliament of 1774 voted it money; and the Prince of Wales, in 1869, favoured it with his presence.

The see of Hull did not last long as, on the death of Edward VI., it was abolished. Had this ecclesiastical title continued, the term "city" would have been more in keeping with the extent and importance of it at the present day. Its aristocratic leanings and its trading propensities have characterised its history for many centuries, down to the present

time. Lord Houghton stated, at a public meeting held recently, that he was at one time a director of the Hull Dock Company, and was still connected with its trade through the Lancashire and Yorkshire Railway directorate. He also pointed out the interesting fact that one of the first barons of England was a Hull merchant.

The Government of the town consists of a Mayor, Recorder, Stipendiary Magistrate, a number of Justices of the Peace, Aldermen, and Town Councillors. The present Mayor is Mr. Jameson—a "Hull merchant," who is also a director of the newly-projected Junction Railway.

The town itself is mostly built of brick, but there are some fine churches, public buildings, and monuments, conspicuous amongst which is that to Wilberforce. The *Hull News*, of 17th May last, in commenting upon the then approaching show of the Royal Agricultural Society, with some degree of justifiable pride, pointed out to its readers and especially for the behoof of strangers, that "many of our public buildings, for style of architecture and beauty of appearance, will favourably compare with those of other towns of even larger size."

Looking at the past history of Hull, and judging, with reference to its situation, there can be small question that a much more expansive future remains for it yet. It has for many years become the principal steam-packet station on the east coast, north of London. The development of this branch has been great in the past twenty years, but it is evidently expanding much more rapidly still. In the year 1849 the number and tonnage of steamers which entered and cleared outwards in all trades —coasting, colonial, and foreign—were 2,072 vessels, measuring 440,329 tons. In 1871 the corresponding numbers for the same trades were 4,237 steamers of 1,786,359 tons, being double the number of vessels, and four times the tonnage, in twenty-two years. As the majority of the trade is done with the Baltic and North Germany, there is great reason to suppose that, owing to the consolidation of the German Empire, the stimulus thereby given to trade will be very great at the port of Hull. The opening up of the ironstone of Lincoln, and the coal of Nottingham, by means of the new line, also the improved facilities to be given at the docks by the new powers granted, inducing the manufacturing districts to have more confidence in the port, will all tend to send her on a career of expansion and prosperity.

The Humber is one of the noblest rivers in the island. Formed of a mass of waters derived from the Ouse, the Aire, the Trent, the Hull, the Foulness, and other smaller streams; it stretches out for six or seven miles as it debouches into the German Ocean. It was noted as the Abers by Ptolemy. It is no less capable of being, not only the mouth of many rivers, but the outlet of much more traffic than hitherto.

It may be as well to mention, before closing this article, that there

are several institutions at Hull more or less connected with shipping and trade. Of such is the Chamber of Commerce, the Sailors' Home, and the local Marine Board, under the management of which the seafaring population are reputed to be as orderly and well-regulated as any other, of the same class, in the ports of the kingdom. There is also a training-ship, the *Southampton*, stationed there since 1868, for the purpose of training homeless and destitute boys for the sea or other services. It is supported by Government grant under the "Industrial Schools' Act," and by the voluntary contributions of the benevolent.

Until a comparatively recent date, Hull took a very prominent place in the Greenland whale fishery. A few remarks, therefore, as to some of her whalers, will not be out of place in concluding this article.

In the year 1820, 60 ships were fitted out from Hull for Greenland and Davis Straits; of that number the *Highflyer* was lost at Greenland; *The Brothers* lost at Davis Straits; the *Duckenfield Hall* stranded on the Orkneys; the remainder brought home safely, into Hull Docks, 7,978 tuns of oil, 690 whales, 919 seals, 34 white bears, 15 unicorns, and 2 large sea-horses. In 1821, 58 ships left Hull for the above countries; the casualties were much more numerous than in the preceding year. The *John*, *Symmetry*, *Harmony*, *Leviathan*, *Henry*, *Cervantes*, *Aurora*, lost at Davis Straits, the *Thornton* lost at Greenland, and the *Hebe* lost on her passage to Davis Straits; the remainder got safely home with 498 whales, which produced 5,888 tuns of oil. In 1822 the ship *Lee* brought home 16 whales, producing 184 tuns of oil—14 of which were caught after all the other ships had left for home, the last of the fleet arriving early in October. The friends and relatives of those on board the *Lee* now began to be very uneasy, and were filled with terrible anxiety as October wore on without bringing any tidings of her. November came, and still no news. Underwriters would not accept any more risks on the *Lee*. The ship and crew were given up as lost. Wives put on their widow weeds; friends went into mourning. The local friendly clubs were preparing to pay over to the friends of the missing men their individual claims, when, on the 17th November, a large Greelandman was seen coming up the Humber. Telescopes were eagerly brought to bear upon her, and soon pricked off as the missing *Lee*. The news spread rapidly through the town. Immense crowds wended their way to the piers; the poor heart-broken widows and mothers put away their symbols of grief and mourning. Great rojoicings were shown in the town. Bands of music and processions marched through the principal streets; several public-houses were thrown open free for all who chose to drop in and toast the missing crew of the *Lee*. We doubt whether so much feeling would be shown now. 1823 was

also a successful year; the *Gilder* arrived home "chock-a-block"—*i.e.*, "full." The *Brunswick* had 32, and the redoubtable *Lee* 26.

The whale and seal-fishing trade from Hull since the above period has gradually declined, now and then reviving in fitful starts until 1869, when the last of the whalers, the famous s.s. *Diana*, Captain Richard Wells, drove ashore on Donna Nook, south of the Humber, during a fierce N.E. gale; ship and cargo were totally lost; the crew were saved. This ship, during her short career as a whaler, became celebrated throughout the country. In the year 1866 she was fitted out from Hull for the "whale fishing," and was commanded by Captain John Gravell, who had made many voyages to the country. The *Diana* got beset in one of the numerous creeks in those seas, became surrounded with "ice," and remained firm and fast throughout a long and dreary season. The sufferings and privations of the crew, shut up in their prison-ship amid the inclemency and darkness of an artic winter, their very stinted allowance of provisions, and the hourly danger of being crushed to death in the ever-moving masses of ice, were terrible indeed. Fortunate was it for the crew they had with them in their awful situation such a kind, considerate, experienced man as good Captain Gravill. To his intelligence and firmness in the allowance of daily provisions, and his judicious arrangement for their exercise, varied with such amusements as his ingenuity could devise, the crew attribute the safety of their lives. The inclement weather, and great anxiety, proved too much for their gallant chief. On the 26th November, 1866, Captain Gravill died. This sad event cast a gloom over the crew, most of whom had sailed many eventful voyages with their beloved captain, and were very sincerely attached to him. It was determined, if they saw England again, to bring the captain's body home. The carpenter prepared, out of such material as could be found, a rough deal square coffin, and placing ice round the corpse, placed it on the best whale boat, on the 28th February, 1867. The symptoms around the ship gave sure signs to the poor fellows on board of the ice cracking, on the 3rd March, 1867. The ice broke away, leaving a lane of clear water right a-head, and the stout old ship, with her mournful burden, was speedily under way for England. She arrived safely in Hull, April 26, 1873. Captain Gravill was interred in the Hull cemetery on Spring Bank. A vast concourse of sorrowful people of all classes assembled to show their profound grief and sincere respect for this thorough English seaman, whose courteous and manly bearing won the respect and admiration of all who knew him.

The harpooners of Hull, by their skill and daring in striking and capturing whales, have made themselves a great name throughout all whale-fishing countries; several of the finest American and Scotch ships carry picked harpooners from Hull. As there are several good experienced

crews yet to be obtained in Hull for the Greenland and Davis Straits fishery, it is surprising that the people of Hull should sit down and allow this once flourishing branch of their commerce to cease altogether.

The port which will claim our next attention will be that of Dublin.

ERRATA.—In April number, for 1328, read 1338, at line 26, page 297. In May number, for 4 roods, read 3, at line 8, page 374.

SHORT YARNS FOR SAILORS.—No. 4.

LOVE.

IT happens to young sailors, and indeed to all other young men, that at some period during the spring or summer season of their lives, they fall in love. Nature having certain necessary purposes of her own to realize through the medium of the love passion, has given it a very high degree of intensity in the temperament of youth, so much so, that a kind of dangerous giddiness is apt to come over us, making us reel and swim, and now and then to fall, in a somewhat serious way. Remembering the natural origin and force of the sentiment, no man of sense and feeling will ever be hard and unsympathising in his condemnation of the extravagances of an enthusiastic lover. Still, in a gentle, but earnest way, some kind of protest and warning seems to be necessary, and ought to be given. If human life were only a series of feverish dreams or reveries; if our natural food were wine, tobacco, the lotus, or the opium plant, and no other, then the whole function of humanity might be summed in the recommendation to drink, chew, smoke, dream and love sensuously and passionately, "for to-morrow we die." But as life has pains as necessary to its purpose as its pleasures, as duty in the rough is as needful as enjoyment in the smooth, as reflection walks in the garden in the cool of the day after passion has basked in the noontide hours, it behoves us to look at our humanity on both sides, to make its different tendencies and functions coalesce and harmonize, so that there may be no delight at variance with duty, and no duty untempered without sweet enjoyment. The love-rapture is often a means of generating or calling forth many noble energies and generosities of character, and is therefore a thing not to be in any way contemned or despised; but, as a rapture, it is necessarily only brief, and requires to be guided, moderated, and cooled. Sailors are commonly associated with sweethearts in the popular fancy. Love comes to them as it does to all other men; but in their case there seem to be some peculiar wiles, arts, and

fascinations brought to bear upon them which require the resistance of more judgment and thought than poor Jack commonly possesses. When a ship comes into port with a lot of smart, handsome young fellows on board, having two or three months' wages due to them, it is not uncommon, we believe, for several "Black-eyed Susans" on the shore to be making tender inquiries for "Sweet Williams" among the crew. These enquiries lead to acquaintanceship, that in its turn to intimacy, and onwards perhaps to engagement and marriage; and as the nymphs in question are not always remarkable for their domestic or other virtues, it results to the poor charmed mariner that what he hoped might be the wine of life, ferments into vinegar, and his happiness withers before it blooms. A truly loving, earnest, sensible girl, as wife or sweetheart, is to the man possessing her a blessing of unspeakable value, a kind of guardian angel influencing him, whether present or absent, with useful restraints and gentle encouragements; but, unfortunately, it happens that in mere externalities, in personal form and appearance, in the bloom of the cheek, the richness of the hair, the mould of the body, there may be a remarkable likeness between a guardian angel and a watchful demon, and far more discriminating men than poor Jack have mistaken the one for the other and got ensnared. In mere surface attributes the advantage is often temporarily on the side of the lower characters, as if some pitying Power had given them physical beauty as partial compensation for their possessing nothing else. Beneath the surface the difference between the two is wonderful indeed, and amounts to contrast; but eager and impulsive natures make that discovery too late—not until they have been bitten by the snakes in Medusa's hair. A feverish rapture of the love-passion is not in itself a sinful state of feeling; but it is a very dangerous one, for there is always a chance that it will evaporate or burst and leave nothing but a ruin, instead of toning down into a moderate but happy and permanent glow of feeling. Romeo and Juliet are entitled to our sympathy and regard; but the human love, that is healthy and durable, is generally of a quieter strain.

The best corrective of the excesses of passionate feeling is reasonable feeling, but the difficulty is to bring it to bear just at the hour of need. Tender memories of family and home have a useful influence in this respect. Let the young sailor recall to mind his dear old mother, who toiled and suffered for him early and late, and whose life was constant sacrifice and self-denial; let him remember the poor maiden aunt or elder sister who, perhaps out of her scanty wage as a charwoman, paid in part the expenses of his outfit; let him summon to the chamber of his fancy the forms of all the good people who have been kind to him, of women who put forth not merely the bud and blossom and early leaf of beauty and affection, but the rich fruit of it in deeds

of patient toil, unmurmuring endurance and untiring generosity. Such memories are sure to awaken love in a sailor's heart, warm, tender, quiet love, and will help to infuse the religious element into more romantic passion. The new ties of the sweetheart will interweave with the older ties of childhood and of home.

Very few men are, and none ought to be, utterly insensible to personal charms. It is pleasant to look upon bright eyes, and soft hair, and fair complexions, and graceful limbs. It is just as innocent and natural to admire these and to be affected by them as to take pleasure in the tracery of the silver birch, the delicate leaves of the young heaths and ferns, in the colour, form, and fragrance of the flowers. But in humanity there is sometimes another kind of beauty that does not always come out into conspicuous form and expression—a beauty that throbs at the root, but cannot as yet, because of many physical and social hindrances, burst forth into flower. It awaits the influences of a more genial world. Happy is the man who discerns and loves it while it is yet hidden from the common view. The Martha of Scripture, whose merit of character seems to have been of a homely and domestic kind, and consisted in much and faithful serving, may have been a very plain woman; the Mary who used the spikenard and the tresses of her hair may have been a very beautiful one. But to the heart of the Master they were both dear, for he could discern the beauty at the root as well as the beauty in the flower.

But look, my hearties, over that beautiful bay that stretches out between us and the land! How bright the sun shines upon the waves, how blue the skies above, how soft the air! The captain has summoned a boat's crew to take him ashore and they are already seated in the skiff. Mark how the smooth beautiful water dimples and smiles as the boat moves on, and as each oar is feathered and turned how the bright foam trickles downward in glittering drops upon the sea! Is there not something in this that may remind us of the smooth, onward-gliding movement of early life when there is youth, and hope, and love, and elastic spring, with just now and then a few tears trickling down from the edge of some gentle sorrow? And remember to look at the boat when it comes back again. You may possibly discern a little soil and stain that requires to be cleansed, a little bilge-water under the flooring that will have to be baled out, a slight crack or strain at the sides that will need a touch of oakum and tar, and many a small sign of wear and tear that will have to be watched and be mended or renewed in due time. And may not this, too, be suggestive? Even in the most tranquil life we wear out as we gently move. Even love itself may need renewal and repair. Our hearts may contract some blemish and stain from the elements in

which they live. Every year our characters may need something to be added and something to be taken away, but if we be watchful of defects and do our best to amend them; if we love on, love ever, love wisely, and love well, our hearts will keep sound and staunch to the end of our mortal voyage, on the edge of that maelström into which we glide and pass away.

E. A.

THE PASSENGER ON BOARD THE *PACIFIC.*

By Captain Townley Fullam.

We have great pleasure in inserting the following as a *bonâ fide* contribution from a British master mariner:—

Favoured with fine weather whilst steaming down the Irish Channel, in the month of October, 186—, our passengers seemed to have settled themselves into the usual divisions or cliques, ever met with amongst a number of persons who have of necessity diversified modes of thought and feeling.

The exception was of necessity there; the exception is to be met with everywhere, but *this* exception was an exceptional one.

A small made, delicate man, of some five feet two, cold, restless, grey eyes, eyes you instinctively felt were seeing—probing you through; eyes that made you halt, falter, when a question was asked. Cold, steely, cutting eyes. Egad! I'd sooner have faced a glittering line of steel bayonets, than have dared prevaricate when those eyes asked a question. Small mouth, firm and determined; hands and feet in strict harmony with his build; thick black hair, an iron grey moustache; a suit of grey, loose turn-down collar, with a black silk neckerchief, always tied in a loose knot; and this is the only picture I can draw of what our debating purser called "an embodiment of deified will." And this was the clearest and truest definition that could be given of him; the quartermaster's description that he was "some woman devil, come on earth in the shape of man," was only true so far as the influence his presence excited. Every soul on board felt that influence, although if each asked the other to describe the man, or define the influence, each undoubtedly felt no two descriptions or definitions would agree. To me he was a curiosity, seeming to possess a sort of empirical mesmerism over all. His mode of passing the time was methodical and regular, seemingly to enter into nautical life, as one accustomed to it. Rarely speaking, and then only monosyllabically, he was the paragon of politeness, although

only as it were by his actions. He, in the most self-possessed, well-bred manner, would have translated a foreign review, or rendered a whole play of Shakspear's by his pantomimical bearing alone.

Round the sides, by the front of the poop, were sockets, in which portable seats could be fitted, and in one of these, generally, in the same one, if wind and weather permitted, Mr. Carter, as he called himself, would sit and light a cigar each evening, at seven o'clock precisely. Feeling strangely interested in him, I endeavoured to become acquainted, and having been fortunately enabled to do him a trifling service, we slowly, but surely, entered into a charming familiarity, which gradually ripened into a firm friendship, such as is seldom met with, between two of such dissimilar ages and temperaments as ourselves. It was whilst enjoying the evening cigars, as the early darkness closed around us, after we had entered the tropics, that he unfolded his history, at least such part as is here set forth. It is, of course, impossible to commit to paper the earnestness of feeling he threw into his story. He began abruptly—

"You are wondering why I am going out to the West Indies?" asked Mr. Carter, to my intense astonishment at his divination of my thoughts. "I'll tell you, without hesitation, although you are the first person to whom I have mentioned the object of my journeys. I am going in search of a voice!"

And as he said this, his own voice was a little tremulous, and for an instant, the stern mouth relaxed its habitual hardness, and the eyes wore a softer hue; but it was only for an instant. He continued:—

"A great living statesman once said, that 'he had attempted many things in his life, and had often succeeded in the end.' *I* have attempted one thing during my life, and by Heaven, *I* will succeed in the end."

He stopped for a moment, and then proceeded:—

"It is just thirty-five years ago, upon returning from my first voyage to India, I was surgeon on board the *Delhi*, having obtained leave for a month, to visit my aunts (the only relatives I possessed in the world), who resided near Lancaster, that I took advantage of a day, whilst journeying, to stay at Liverpool. Having seen all that could be seen in a three hours' stroll, I returned to my hotel, the large vestibule of which was full of luggage, evidently belonging to some persons leaving. I not unnaturally glanced at some of the directions: 'Miss Stone, Liverpool;' 'Mr. Ward, Rio de Janeiro;' 'Mr. Stone, Liverpool;' 'Miss Ward, Rio de Janeiro.' I stopped a moment, wondering whether they were brothers and sisters, or fathers with their daughters. And this led me to think of my own loneliness, and whilst thus ruminating in forgetfulness, I was startled by hearing a rich, musical voice exclaiming, 'Are you all ready, Charlie?' Remembering myself, I turned round, and was about to

apologise, when I was stopped by a young lady, with auburn hair and blue eyes, saying, 'I beg your pardon, I thought it was my brother; ah! here he is,' as a young man entered the vestibule. She then quickly explained the situation to her brother, but I was so confused, and so bashful that, attempting to mutter an apology, I raised my hat, and passed upstairs to my room, dreaming and picturing of the happiness such an one as that young lady would bring into a household. Indeed, so preoccupied was I, that the dinner bell passed unheeded, and the evening far advanced, ere I recovered myself and remembered that I would soon have to be on my road. That voice haunted my sleep that night, and more or less, has haunted me ever since. Sir," repeated Mr. Carter, rising into dignity, "that voice has haunted me ever since. I am going to the West Indies in search of that voice."

He stopped, and turned those clear, searching eyes upon me, as if to ask or read my thoughts of his announcement. Fortunately I restrained myself, and put on a look of the most solid immobility. He was evidently satisfied, and continued :—

"I am singularly susceptible to musical influences, and at times have been driven half wild upon hearing voices so closely like that of the lady's who spoke to me at the Pegasus Hotel. Well, I visited my aunts, who were eternally questioning me respecting the fits of abstraction which repeatedly came over me, as my thoughts returned to the possessor of that auburn hair, blue eyes, and rich, full, musical soprano voice. My leave being up, I returned to London, and on the —— of October, 18—, sailed again for Calcutta.

"The *Delhi* was a large ship of the old school, a fine vessel, and although we were without steam, let me tell you, young man, you would have made a poor show in a good stiff breeze alongside the *Delhi*. We had a large number of passengers, who certainly enlivened the otherwise monotony of sailing-vessel life, but owing to light winds the passage was very tedious. You may be sure that I never forgot that voice; it haunted me at all hours; and many an ill-timed and ill-brooked jest was levied at my expense during the many hours of abstraction I pondered about my goddess—aye, goddess! I was callous to everything, and went the round of my duties mechanically; until one evening, just after dinner, a passenger asked, 'Shall you put into Rio, Captain?' 'Yes, I think we shall,' replied he. Sir, a delirious fever of ecstatic joy seized me; I rushed into my state-room almost mad with excitement; when the thought struck me, was the possessor of that voice Miss Stone, or was she Miss Ward? I was inclined to think it was the latter, and, if so, I should possibly—nay, I *should* see her in Rio. But if it were the other? I fell down, Sir, and crouched like a cur; I dared not think; but seized a bottle of laudanum, and—that is all I knew, for, as they told

me afterwards, two days. In that cabin I registered a vow, that I would find the possessor of that voice, and, by heavens, Sir, I will yet."

Mr. Carter stopped, a sort of convulsive tremor seized him, which, however, he seemed to shake off, and was himself again in an instant. He proceeded:—

"The one idea continuously floated through my mind—Stone or Ward; Ward or Stone? You will see, Sir, the dreadful position I was in; I saw, as we always see, when too late, how I had erred in not ascertaining which was which when in Liverpool; 'twas now too late, and I awaited with an outward calm, but with a burning restless spirit, our arrival at Rio. The day after this we anchored; but for a long time I dare not go on shore; the dreadful idea lest it should be Stone rendered me almost helpless. At last I reached the shore, it was evening, and, although after office hours, I went to the Consul's. He was not at home; had gone to the British Embassy to dinner. Without hesitation, I drove to the Embassy, and asked to see the minister upon business of the highest moment! 'He had just sat down to dinner,' was the answer. The prospect of delay made me impatient; I must see him at once. 'Go,' said I, 'and tell him he must come!' He came. Did he know the Wards?—had they arrived?—or was their name Stone? If so, would he give me their address?' Would you believe it, Sir! that man stood and heard me as though he were a statue! and I, Sir, felt as if my life-blood was ebbing away. To all my prayers and entreaties that man answered never a word, merely went to the window, and simply said, 'Remove him—he's mad.' I made one spring towards him, but was immediately seized—and—that is all I knew for some time, except that I ever seemed to feel a dull heavy sense of pain, as though a clouded weight enshrouded me. I learnt afterwards that one of our passengers had seen me in the street in a fainting condition, and had taken me on board, where, through weakness I suppose, I had been confined to my room for a week. My recollection of the passage to and from Calcutta, until nearing the Mauritius, is not very vivid; I know I felt as if I was living in a torpid state. Well, Sir, we fell in with a gale—a cyclone you call it now—and such a gale, Sir; it gave *me* new life, although the ship suffered severely. As the storm increased, so my spirits rose: I laughed, danced, sang, and wept in hilarious joy. The Captain locked me in my room, I suppose to keep me from danger, as the ship worked and rolled dreadfully, taking on board immense volumes of water. Some days after, the wind abated, and I remember for days all hands were kept pumping—passengers as well. My recollection is not very vivid of what took place after that; I, however, distinctly remember we were all placed in boats, and eventually reached the Cape of Good Hope in safety. Yes; the ship had been abandoned. Possibly you've been at the Cape?"

I assented.

"Fine climate there, Sir;—but I believe I was ill from the effects of fatigue and exposure. I was a long time there, and knowing I should have to wait for a Company's ship to return to England, I engaged myself to assist a medical man, whose health was gradually failing. One evening there was a ball at the Government House. I was there, not from choice, but to please my partner. The secret was, that he had a patient, a fat, wealthy old dowager; she and my partner had made an agreement that, in consideration of a handsome *honorarium*, he was to attend all places of public, and, if possible, private amusements, for she was in hourly expectation of being suffocated by her enormous fatness. Amidst the busy throng, I forgot the patient, and devoted my attention exclusively to the music, which was of a higher order than usually met with in a colony. Well, Sir, morning had arrived; and soon everyone had rushed down to supper except myself. I wandered into the music-room—this room overlooked the garden—the windows were open, and the lights turned low. I do not know how long I sat there indulging in a reverie of the music I had heard, when suddenly a voice from the garden exclaimed, 'Would you like it, Charlie?' Great God! *that* voice; the same I had looked for, hoped for, prayed for. So soon as I could realise the truth of my position, I sprang out of the window, and fell bruised and hurt at the feet of a couple, a man and a woman, and he held her as only a lover would hold his beloved. He uttered an exclamation, she shrieked, and, notwithstanding the fact that shrieking is not musical, there was about that shriek a fullness and a mellowness that could only come from a cultivated voice. All this passed quickly through my mind whilst lying somewhat prostrate upon the ground. 'Run, Annie,' said the male voice; 'I'll see you after I have made out the meaning of this.' Oh, how I longed to call out, to implore her to stay. Sir, no words can convey an idea of the agonizing feelings that came o'er me as she left that spot; I felt, Sir, as though an iceberg had come between me and the sun. I hadn't much time for thought allowed me, ere the man who had urged *her* to run, seized me in his brawny arms, and said, 'You little beast, —— you! Don't you see, you've frightened her.' The loathsomeness I felt for that brute, and the sting his words inflicted, roused me to action; I made desperate efforts to free myself from his grasp, but I was powerless in his hands. 'Sentry, send for the guard,' shouted he. They came and seized me. Oh, how I begged, prayed, expostulated, threatened; asked on my knees for an opportunity to go in search of the lady with that voice. That huge brute laughed, and denied any one had been there, said I was drunk or mad, and, in the midst of my protestations, I was borne away to the guard-house. The next morning I was released

upon giving my name, and so great was my anxiety to see my beloved one, that without returning to my place to dress—I fancy my attire was slightly disordered—I at once made for Government House to demand reparation for my imprisonment, and to ask his Excellency's aid to find that voice. When I arrived at the building it was noon, and, in answer to my inquiries, I was told that his Excellency had just sat down to a Cabinet Council. Burning with impatience, I sent word that my affair was one of moment. 'Immediately upon the rising of the Council,' was the answer. The delay was torture, my brain reeled at the agonizing suspense, so, without more ado, I ran through the corridor, pushed past the sentry, and entered the Council Chamber. The Council looked somewhat astonished, but anxiousness impelled me to enter into my story with a rapidity of utterance I am not usually gifted with. For some moments I was listened to; when a bell was pulled, some order given, and soon I found myself struggling with two soldiers, who took me to the same room in the guard-house I had previously occupied. I do not know how time passed, my next recollection being that of the motion of a ship, which seemed to me so easy and quiet compared with what had passed previously. My cabin door I found was fast on the outside, and upon my knocking, two men cautiously entered, and to my questions assured me that I was returning in the *Cashmere* to England. Upon my asking the reason of my being strapped down in bed, they sent for the Captain, who assured me that the motion of the ship had been so violent they were afraid that in my weak state I would be unable to keep myself from falling. For this I was very grateful, and endeavoured, after getting on deck, to do aught to return the Captain's kindness. For the first week or two, the passengers were very distant with me; afterwards, however, they became more friendly. But I did not mix much with them; only to that kind, noble-hearted Captain did I open my heart, and he, with the pure instincts of a gentleman, sympathized, and promised me his aid in finding that voice. To my entreaties to be put on board any outward bound vessel we might meet, he at first declined; but when I pointed out to him how much more than life was it necessary I should find her, he consented, but as we were never lucky enough to meet with any until we got in the North Atlantic, and then only vessels bound to North America and the West Indies, I was compelled to remain in the *Cashmere* until our arrival in England.

"Landing, I was met by our superintendent-surgeon, who, seeing the wretched state I was in, and which I believe he attributed to physical causes, kindly gave me eight weeks leave, promising to send me out to the Cape as surgeon in the first ship.

"I immediately set off for Liverpool, in hopes that some clue as to her name might be learnt at the Pegasus Hotel. My old rooms were vacant,

and the old waiter was still there. Carefully concealing my object, I questioned the waiter as to the names and destination of those who were with me at the hotel on the previous occasion. All he could show was, that the Stones went to Cheshire, and the Wards to Rio. I then determined to search Cheshire. Directories were not plentiful then, Sir, so I searched Gazetteers, Stewardrys, and Histories of Cheshire, but never found the name mentioned. You have no conception of what I suffered at the end of my eight weeks' fruitless search in Cheshire, although I never forgot that she might still be at the Cape. Arriving in Liverpool, I found letters awaiting me from my aunts, urgently entreating me not to leave England without seeing them; remembering their great kindness to me in days gone by, I arranged to leave by the coach which left for Lancaster the next morning. A heavy sense of weariness came over me as I sat alone in the hotel, so I lit a cigar, and strolled. I am not well acquainted with the town, but I remember my course was up a hill at right angles to the river. How far I proceeded I know not; but I remember sitting down to rest upon the stonework of the railings in front of a house standing a few yards back from the main road. I noticed it had those low French windows, opening within a foot of the ground. Presently I heard the hum of conversation, and occasionally merry peals of laughter, which seemed to jar upon my ears; so full of misery was I, that I determined to retrace my steps homeward. No sooner had I risen, than a chord struck upon a piano arrested my movements. A bold, vigorous stroke, followed by a quaint, simple melody that strangely moved me. It ceased, and then a clear, full, soprano voice, such an one as I had heard only once before, sang the "Parting"—a fine old melody of the sixteenth century. Of course I stayed, and was nearly fainting upon hearing at the end of the third line that voice, Sir. The perspiration poured out of me; my voice refused its office as I essayed to speak; I was in agony for very joy, and, so soon as I could, opened the gate, ran up to the window, and without a moment's hesitation, opened the window and rushed in. In my impetuosity I overturned a table upon which rested a vase, or something else, and this caused me to stumble headlong, amidst a chorus of shrieks and sounds emanating from those assembled. Regaining my feet, I found myself in a large room with folding-doors, and about ten or a dozen people in various attitudes of alarm; grouped round the piano were five people, three ladies and two gentlemen; to these I addressed myself with a rapidity of utterance that astonished myself. They drew back, as if to leave room, and, in my frenzy, I touched the dress of one, imploring her to tell me if she were my long lost one? Presently, two ruffians seized me, and, whilst struggling in their grasp, the ladies left the room. These scoundrels shook and struck me until I was scarcely able to move; they

then dragged me out of the window, out of the gate, and left me bruised and helpless on the road. How long I lay there I know not, but I awoke, as it were, from a troubled dream, and felt a cold chillness come over me as I arose; even the very stars seemed to cut into my very soul with an icy coldness. By sheer instinct, I suppose, I made my way to my hotel, and lay down, pained in mind and body. I could not sleep, so quickly dressed, and made preparations for my departure. An hour afterwards I was on my way to Lancaster.

"I have no recollection of what transpired on the journey, but I do remember the warm welcome I received at the hands of my relatives, who tried by every means in their power to find comfort and amusement for me.

"Knowing my musical tastes, they one day procured tickets of admission to a subscription concert, which was expected to eclipse aught heard in the town previously. All our local magnates were to be there, and as my stay was limited, I looked forward with an unusual expectation of pleasure for an evening's enjoyment. I don't know how to account for it, but from the time this concert was first mentioned to me, a feeling of quiet happiness pervaded my whole being.

"The evening arrived at last; we entered early, and took our seats in the body of the hall, about the seventh or eighth row of seats from the dais allotted to the instrumentalists and singers. I shall never forget that room, Sir; even now I can see it rapidly filling with gaily-dressed people,—the piano to the right of the platform,—the violoncello reared up against a chair, and the stands for the three violins, flute, and oboe. At length the concert commenced with an exquisite air, and I soon lost myself in the sweetness of the music. A soprano solo, a glee, a tenor and bass duet, and then—Ah, God!"—

Here Mr. Carter started up, with his eyes all aglow, and his slight frame trembling with excitement.

"*She* was there! the same figure robed in blue—the same lovely eyes. A moment's breathless stillness, and then came out, with a glorious richness and purity, a volume of sound, thrilling in its effect, and inspiring in its power. The blood rushed to my head, and for a while I felt as in a trance. My lungs seemed as though they had refused to perform their office, until she finished, and was about to retire, when impelled by some unknown or supernatural power, intensified by the sense of mingled happiness at finding her, and dread of losing her, and with a voice in which was concentrated my passionate joy and love, I cried out, 'At last, O God, at last!' and, regardless of everything, I rushed over the seats, not knowing or caring whether the people resented my progress, stumbled over the flute-player, picked myself up, and mounted the platform, just as she was leaving, stretched out my hands with one shriek of appeal,

wrung from the innermost recesses of my heart, and fell insensible, grasped in the arms of the conductor!

"Many months must have passed whilst I lay ill. I have no recollection of it, save in an eager desire for music ever pervading my whole being. When I recovered, I found myself in the ward of an hospital, and upon being driven to my aunts' residence, I found they were no more; they had died, bequeathing their little property to me. This, though small, was sufficient for my simple wants; so I sold the house, and went in search of my lost one. None seemed to know of whom I was in search; the few friends I knew in Lancaster, in answer to my enquiries, invariably replied with a shrug and a grin, 'that it was really so long ago, they had forgotten all about it.'

"I searched nearly the whole of Britain, and never missed a musical entertainment, feeling sure that one day I should meet her. I have traversed the greater part of Europe, been through the principal cities of America, gone through the Brazilian ports, spent some months at the Cape, and even been so far as the Australian Colonies—all without avail. Yet I have never despaired of finding her. You will see by this *Musical Standard* that a peripatetic troupe are wandering through the principal islands in the West Indies, and amongst them is a beautiful soprano, of marvellous promise. I feel persuaded this is she I am in search of, and if it is, no power shall separate us. Ah! young man, there's a weariness about my heart, a heaviness in my head, and a sort of cloud upon my mental faculties at times, when I think of her, that makes me feel this continued excitement will kill me. Yet I feel certain the day is near when I shall be able to call her mine. Good night, Sir."

The next morning we entered the harbour of Port Royal, and shortly after moored at Kingston. Here our passengers debarked—I left Kingston for Puerto Cabello, Carthagena, and Colon, those places being in our route that voyage. We were detained longer than usual at the latter port, so that our return to Kingston was somewhat delayed. The evening after my second arrival at Kingston I spent at the house of a friend, and took occasion, when music was proposed, to ask if they knew aught of Mr. Carter?

"Oh, that mad fellow, you mean; let's see, why he came out with you, didn't he?"

I assented, but protested against his being called mad.

"Why, man, he was as mad as a March hare, and a man—his keeper—came out after him: the man's dead."

"What, Mr. Carter?"

"Yes, you see, this friend of your's has been in an asylum for years. When young he was engaged to a young lady of great musical abilities, and unfortunately for his peace of mind, she preferred her art to his

arms, so she jilted him, and made music a profession; this, combined with an hereditary tendency to madness, so worked upon his sensitive mind, that his friends have been compelled to place him in a lunatic asylum at times. His lucid intervals were spent travelling in search of his former flame, and it appears that about two months ago he escaped from the surveillance of his keeper, and came out here, followed in the next steamer by this keeper. Meeting this man accidentally in the street, the effect was so great, your friend fell down insensible in the street, was removed to his hotel, and died a few days afterwards. O, bless you, I had the whole story from the man himself, the keeper, I mean; I expect he will go back with you. Come, Julia, let's have a little music."

RULES OF FREEBOARD—EXISTING AND PROPOSED.

THE popular idea upon the subject of the freeboard of merchant ships, and legislation concerning it, is that there is a plain and simple rule, which he who runs may read, capable of easy application to all ships, and not universally adopted, simply because greedy shipowners want to carry more in their ships than can be safely carried, and for that reason alone oppose all legislation upon the question. In a former article, we have attempted to show by the discussion of only one branch of the subject, that the problem of the maximum amount of safe load for merchant ships is not very easy of solution; in the present paper we propose to describe some of the various attempts which have been made to solve it.

The best known rule of freeboard is that depending upon the depth of hold of ships, and usually known as Lloyd's rule. It prescribes a free side of three inches to the foot depth of hold in salt water. This rule is spoken of as Lloyd's rule, because some thirty years ago the committee of Lloyds printed and circulated, for the guidance of their surveyors, a letter in which it was advocated. The same authority has, however, since repudiated the rule, which, indeed, was never intended to become a hard and fast law, or to take the position which it has so long occupied, not more from its intrinsic merits than from the common weakness of mankind for something authoritative and tangible. In the edition of Lloyd's rules, published in 1870, an extension of the principle of the rule to the case of spar-decked ships was put forward; but this was omitted in 1871, and has not appeared since. By this it was proposed that spar-decked ships should have half the freeboard required for other ships, measured of course from the main upper deck. Lloyd's rule was

probably a fair embodiment of the practical experience of thirty years ago upon the subject; but changes have taken place in the dimensions, form, and construction of ships since that period. It was then a rare thing for a ship's length to exceed five or six times her breadth; there were then no ocean steamers, and very few iron ships; certainly a rule ever so just then, is not for that reason applicable now. The objections to Lloyd's rule may be thus summarised: it takes no account of length, a most important element in the case of ocean steamers which are subject to great strains in consequence of some parts only being water-borne, while the others depend for support upon the strength of the whole structure. An advantage is by it given to deep, full ships, since the deadweight capacity cut off from them by this rule, bears a less proportion to the deadweight carried than would be the case in broad or fine ships. No allowance is made for partial decks, which, under some circumstances, certainly do contribute to the safety of the ship. Although these and other objections may be urged against it, this rule is of considerable use when applied with a proper regard to the circumstances of each case, and especially when applied to such ships as constituted the bulk of our Mercantile Marine thirty years ago. In the same way it may be said that the rule, *builder's tonnage*, which depended upon the length and breadth only, was a fair measure of the capacity of ships when it was first used for that purpose; but in time, ships were built to evade the tonnage law, and at last designers were so fettered by considerations of tonnage that a re-examination of the whole question became necessary, and the present rule of register tonnage was the result. A similar process would soon become necessary, if any such empirical and partial law of freeboard as Lloyd's rule were made the basis of prohibitive legislation. Deep and full ships would be built, which should, with the regulation freeboard, carry a large cargo for their size, and thus the remedy for the losses caused by overloading would become the occasion of as much mischief as the evil it was intended to cure.

The rules for freeboard for emigrant ships, and for ships chartered as transports by the Government, are similar in principle to Lloyd's rule. In the former case one-third the draught of water is required to be free side. This usually gives somewhat more than Lloyd's rule, but is not so fair, because the dimension upon which it is based is not a fixed one, as is the depth of hold. The draught of water of two ships may differ by a foot, simply because one has a large hanging keel, while the two ships are precisely similar in all other respects, and, consequently, that one which is very likely the better sea boat of the two, is required by law to have four inches more freeboard than the other, involving, perhaps, a loss of carrying capacity to the extent of eighty tons deadweight. The rule for transports is the same as Lloyd's rule, when there are less than fifty

troops on board, but in all other cases four inches freeboard to the foot depth of hold is required. It may be said for these rules that there are other considerations than the absolute safety of the ship, when passengers are carried, and that to secure the comfort of persons unused to a seafaring life, a large freeboard may be reasonably required, where, indeed, deadweight cargo is a secondary object. It is much to be regretted, however, that even in this case, some rule is not laid down which would take into account more than mere depth; although it is perhaps impossible to consider all the elements of the question, it is certainly practicable to include more than one.

A second class of rules for freeboard are those based upon depth, but not framed upon the principle of a fixed ratio. One of these, known as the American Lloyd's rule, prescribes a freeboard for single-decked ships from one-eighth of the depth, in the case of small ships of only eight feet depth of hold, to two-ninths for twelve feet depth; and for ships of two or more decks from one-fourth the depth of hold, at twenty feet depth, to seven twenty-fourths at twenty-seven feet depth. The rule embodied in the recent measure brought forward by Mr. Plimsoll is of a somewhat similar character. A scale is drawn up on the principle of allowing a smaller proportion of free side to depth of hold for small ships than for large ones, and a larger proportion for wooden than for iron ships over ten feet deep, the ratio increasing till, at thirty feet depth of hold, the freeboard of an ordinary wooden ship is to be ten feet six inches, while that of an iron ship is to be nine feet eight inches. The freeboard of ships having a spar-deck, is to bear the same relation to that of other ships, as in Lloyd's rule. This rule is, in fact, the same as that put forward by the Liverpool Underwriters' Association, in 1869. A scale had been promulgated by the same body in 1867, which, in the 1869 rule, is retained for wooden ships, a reduction being made in the freeboard of iron ships, as we have described. The 1867 scale was derived from a previous rule of a similar character, but not so nicely graduated, which had been in use at Liverpool for many years, and was the embodiment of the practical experience of surveyors at that port. It is questionable if the experience of any one port alone, even so large as Liverpool, would afford sufficient data for the construction of a *legal* scale of freeboard; but the remarks appended to the Liverpool scale prove that it is not set up as a hard and fast rule. We quote them:—

"This scale is intended for first-class vessels only; and is subject in all cases to the judgment of the surveyor. In forming his judgment, the surveyor is influenced by the age and class of the vessel, her form (rise of floor, amount of sheer, general proportions, *closed-in spaces on deck, as poop*, spar deck, &c.), *the intended voyage, season, nature of the cargo,*

and such other circumstances, favourable or otherwise, as may come under his notice."

The corresponding clauses in the proposed Act introduced by Mr. Plimsoll are as follows:—

"Columns . . . . show the freeboard to be allowed for first-class ships for the depths of hold which are named, subject to the judgment of the surveyor."

"Provided always that the Board of Trade may, having regard to the age, length, fullness of bottom, or other peculiarity of construction of any British ship, by order in writing require an increase in the freeboard of such ship, and that before increasing the freeboard of such ship, the Board of Trade may, if they think fit, hear the surveyor of such ship, the surveyor of the Board of Trade for the district in which such ship is, and the surveyor of the book, if any, under which such ship was built."

It will be observed that the proposed Act of Parliament, unlike the underwriters' rule from which it is derived, is only elastic one way, the scheduled scale is absolutely the *minimum* scale. We have italicised the clauses in the Liverpool rule, for which there is nothing to correspond in the proposed Act. It would almost appear that the reason of their excision was that it was seen that a law encumbered with so many qualifications and exceptions would not work; the question then is, should everything be given up for the sake of simplicity? It is of course manifest that such considerations as "the season of the year," "the intended voyage," and "the nature of the cargo," could have no effect upon a legal freeboard settled when the ship was built, and indelibly marked on her side. The great danger attending the popularisation of any such subject as this is, that too much is likely to be sacrificed to make things straightforward and easy of comprehension. If the aid of the "congregations" is invoked, the remedy proposed must be brought within the comprehension of "the congregations;" and thus it is that questions of a highly scientific character are put in shape, for the—we can hardly say judgment of—unscientific people by the difficulties being simply left out. It is so much easier to cut the knot than to untie it.

The law of a graduated freeboard of depth is not much more than a slight improvement upon Lloyd's rule. Even some of those who framed it evidently consider it to be no satisfactory settlement of the question; one gentleman especially, who has made some most valuable contributions to the literature of the freeboard question, prefers a freeboard of volume to one of depth alone, although he is, or was not a short time ago, prepared to recommend any hard and fast rule as the basis of legislation. Even a *temporary* rule of freeboard depending upon depth would probably lead to some evils. To render it at all practicable, it would have to be,

as has been well said, framed upon the hypothesis of the best possible ship, stowed in the best possible manner; and how could such a rule be applied to ships of varying lengths, breadths, fineness, structural arrangements, and all the other features in which ships do differ, merely on the judgment of surveyors, whose opinion must necessarily be formed hurriedly, and in many cases upon insufficient data. Such a rule would, it is to be feared, in too many cases, give Government sanction to an unsafe load line, while in many others it would, without due cause, cut off from ships all profitable employment. On the evils of hasty and inconsiderate legislation we will quote a warning from a writer in *Naval Science*, for July last, who, in giving the history of clipper ships, has well shown the evil inflicted upon our Mercantile Marine in the past by the old tonnage laws. Mr. Gray had, however, in our pages, pointed this out long ago. On this well worn, but not the lesss important topic, *Naval Science* says:—

"We have, in the foregoing article, sketched out, indirectly, some of the results to our shipping which flowed from the legislation that forced us from the pernicious influence of the old tonnage laws. In conclusion, we would say, while cordially supporting Mr. Plimsoll in his endeavour to obtain legislation, let us most carefully and zealously guard ourselves in fixing a load line, or in imposing other restrictions, against any clauses having a tendency to prevent the free growth and development of the *form* of ships, so as to avoid the errors of former days, which went a great way towards placing our carrying trade in the hands of foreign powers."

This is from a cordial supporter of Mr. Plimsoll.

A conspicuous defect of the rule of freeboard which we are now discussing, is the way in which the spar-deck question is dealt with. Everyone knows that there are spar-decks and spar-decks, but, apart from the wide differences between their strength and construction, is it reasonable that an erection of ten feet should have no more effect on the freeboard in any case than an erection of six feet? If this rule were legalized, there would be a direct inducement to shipowners to put spar-decks on all moderate sized, as well as large ships, whether they were improvements or otherwise; and it would also be most profitable to make the spar-deck as low as practicable. A great and inevitable drawback attending all prohibitive legislation on questions of so complicated a character is, that parties interested at once give up all idea of any other responsibility than is included within the words of the law. The restrictions laid down are accepted, or rather put up with, and every one who is injuriously affected by them straightway goes to work to evade them, or, at least, to to keep within the letter, while eluding the spirit of the law.

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The two supposed advantages of the Liverpool rule of freeboard over the old Lloyd's rule are, as we have said, that it gives a greater proportion for small than for large ships, and for large wood than for large iron ships. Undoubtedly it is easier to obtain great structural strength of the kind needed to bear the strains to which a large ship is subject in a vessel built of iron than in one built of wood; but from this, to the conclusion that large iron ships are uniformly stronger than large wood ships, is a very long step. The chief respect in which iron is capable of more than wood, is in giving longitudinal strength, and any rule of comparison of the strength of wood and iron ships which neglects the length, neglects the most important element of the question. Nor is it by any means certain that small vessels will uniformly do with a less ratio of freeboard than large ones. The truth is, that the class of small vessels which are noted for low freeboard, and are yet very safe, are usually employed on coasting voyages; would it not be an equally logical inference that coasting vessels require much less freeboard than sea-going ships.

A striking proof of the very hasty manner in which this rule of freeboard was drawn up, is the fact that even the very simple question of the difference due to salt water and fresh is entirely misunderstood. The words used on this subject are:—"The freeboard of any ship ascertained as above less by one-fortieth part of the same, will be the freeboard of such ship when immersed in salt water." The facts of the case are very different from this; salt water is about 2·6 per cent. heavier than fresh, the ratio one-fortieth would, it may be said, be near enough, but the way of applying the principle is very wrong. It is the whole volume of displacement which is less by one-fortieth part of itself in salt water than in fresh. If we suppose the volume of ships above water to average three-tenths of the whole volume—they most likely do not average so much as this—then the immersed volume is to the volume above water as seven to three; and one-fortieth of the former is equal to 7-120ths (about one-seventh) of the latter. If the side were perpendicular all round at the water line, the difference in freeboard would be one-seventeenth on the assumption of one-fortieth being the difference between the buoyancy of salt and fresh water; but it is, in fact, more than this. On Mr. Plimsoll's rule the difference in freeboard would be one-thirteenth of an inch to the foot depth of hold; every shipmaster knows that it is quite a quarter of an inch. If the bill had become law, this little error alone would have improperly and erroneously cut off from the carrying capacity of a ship of three thousand tons gross register, as much as one hundred and twenty tons deadweight of cargo.

In our last article upon the subject of freeboard, we noticed the rule proposed by the Council of the Institution of Naval Architects for a

minimum freeboard. This rule does not appear to have been put forward as an entire settlement of the question, as may be gathered from a recent discussion at the same institution, on which occasion no one advocated it as a complete rule of freeboard. We give this rule from the transactions for 1867:—

"The proportion of freeboard should increase with the length. One-eighth of the beam is a minimum freeboard for ordinary sea-going ships of not more than five breadths to the length, and $\frac{1}{3}\frac{1}{2}$ of the beam should further be added to the freeboard for each additional breadth in the length of the ship. The addition of a spar-deck on long vessels may be considered an equivalent or substitute for the increased freeboard required for extra length."

If this rule were made the basis of legislation, there would be an inducement held out for owners to increase the depth of their ships. Everyone connected with shipping knows that that would be a great evil; it has, however, been of great service in dispelling the old idea that freeboard should be merely a ratio of depth, and has enforced the necessity of taking into account the important question of reserved stability.

The second important class of rules of freeboard are those which are based upon the *volume* of the ship. It is obvious, at the outset, that rules of this character take in much more than those which depend upon one dimension merely, but, at the same time, it must be remembered that there are many important elements of the question which do not vary with the volume. Besides the fact that the safety of a ship at sea depends upon many features of her construction, which are not dependent in any way upon her form or volume, it may be said that, in comparing two ships which, for strength, equipment and stowage, should be all that could be desired, the freeboard should not be less any one of four separate dimensions, one dependent on the length, a second upon the breadth, a third upon depth, and a fourth upon volume. To fix freeboard, in such a case, by volume only, might not be right, but it would be more nearly right than to fix it by any single element.

There has been for some years a practical rule of freeboard depending upon volume, perhaps the best rule that has been used, although its utility has been much impaired by the many erroneous ways in which it has been applied. The rule we refer to, is that based upon register tonnage. It originated, not in any proposition for regulating the dead-weight capacity of ships, but in a paper put forward for the information of shipowners, by the late Mr. Moorsom, the Surveyor-General of Tonnage. Previous to the passing of the Merchant Shipping Act of 1854, the register tonnage of ships had been obtained by means of very defective rules, as is pretty well known in the mercantile world; and soon after the introduction of the new system, it was considered desirable

to collect and publish some useful information upon the subject, which would enable shipowners to take all the advantage possible of the accurate, fair, and exact measure of the actual capacity of ships supplied by Mr. Moorsom's method.

We quote the title of the paper, and those clauses of it which refer to our subject:—

"A brief Explanation of the nature of the Register Tonnage of a Ship, as ascertained under the Merchant Shipping Act, 1854; and of the easy means it affords for estimating approximately the Measurement and Deadweight Cargoes of Ships.

"3rd. To ascertain approximately the deadweight cargo in tons weight which a ship can safely carry, on an average length of voyage (deadweight bearing a certain qualified relation to internal capacity) it is only necessary to multiply the number of register tons under her tonnage deck by the factor $1\frac{1}{2}$,* and the product will be the approximate deadweight cargo required.

"4th. With regard to the cargoes of coasters and colliers, ascertained as above, whose short voyages require but a small equipment of provisions and stores, and whose frames or shells are of a larger scantling in proportion to their capacity, than in the larger classes of vessels, about ten per cent. may be added to the said results; while, on the contrary, about ten per cent. may be deducted in the case of the larger vessels going longer voyages.

"5th. In the case of steam vessels, the weight of the machinery, water in the boilers, and fuel, must be deducted from the whole deadweight, as ascertained above, by the application of the deadweight factor."

This statement is based upon the assumption that there is a fixed ratio between the internal and external cubic contents of ships of the same class, the former being indicated by the register tonnage under deck, the latter by the load displacement which is supposed to be a definite proportion of the whole volume enclosed within the external surface of the ship below the deck. It must be remarked, in the first place, that this statement was drawn up only for the information of shipowners as to what their ships might reasonably be expected to carry with a given under-deck register tonnage, not as the limit of what they *ought* to carry. It was based upon statistics supplied from experience with such ships as were common twenty years ago, and in any applications of it at present it may be necessary to consider deviations from that type. It must also be noticed that it referred only to wooden ships,

* "The deductions necessary to be made for provisions and stores, &c., agreeably to the opinions of several experienced shipowners and brokers, are allowed for in the selection of the factor."

and any trustworthy application of the rule to iron or composite ships can only be made by those who are in a position to make the necessary allowances for the differences, on the one hand of the weights of the whole structure, and, on the other, of the cubic contents of the shells of iron and wood ships. It is impossible to be very precise upon a matter of this kind, but it may, perhaps, be said that in ships of precisely the same external form the difference in internal capacity (that is in register tonnage under the deck), owing to one being built of iron and the other of wood, may be a higher or a lower percentage, while the weight of the wooden ship may, according to data collected by the late Professor Rankine, be expected to exceed that of the iron ship by about 5 per cent. of the load displacement in tons. If these considerations be duly taken into account, the register tonnage of a ship may be of great assistance in estimating the freeboard of volume, and its especial fitness for this purpose is further shown by the fact that it is, in very many cases, the only existing measure of the volume, and in all the only impartial and incontrovertible measure.

Many mistakes have been made in the application of what we may, perhaps, call the register tonnage rule of freeboard, and most unfair inferences have been drawn from them in consequence of the common ignorance of the meaning of *register tonnage*. During the recent agitation upon the subject of overloading, it has often been said, and the statement has awakened much wasted, because misplaced, indignation, that a certain steamer was known to have left port for a sea voyage with a deadweight cargo of *double her register tonnage*, it has been even put in the form *double the tonnage she was registered to carry;* and, on the other side, it has been said that the same ship could not be overloaded, seeing that she carried less tons deadweight than her register tonnage. It is, of course, unnecessary to say here that ships are not registered to carry any quantity of cargo whatever, but that the register tonnage is merely the basis of assessment of the ship for dues. It may, however, not be altogether out of place for us to state the fact that in steamers the *nett* register tonnage is not of the slightest use in estimating the carrying capacity. There are steam vessels afloat which could carry an infinite number of times their register tonnage, because, owing to the present faulty law of engine-room allowance, their register tonnage is almost *nil*, and there are ships which, if loaded with a cargo equal to their register tonnage, would be unsafe. We do not propose to give here a detailed description of the law of register tonnage, but it may, perhaps, suffice to state briefly the connection of the several items of tonnage with that one which has anything to do with freeboard. In the certificate of registry of a British ship, the tonnage is shown somewhat as follows :—

Gross Tonnage.	Tons.
Tonnage under Tonnage Deck	—
,, of Space between Decks	—
,, of Poop	—
,, of Bridge Space ...	—
,, of Forecastle ...	—
Gross Tonnage	—
Deductions as per contra	—
Register Tonnage ...	—

Deductions.	Tons.
Allowance for Propelling Power	—
Allowance for Crew ...	—
Total Deduction	—

The element of the register tonnage referred to in Mr. Moorsom's paper is the under-deck tonnage, and when the main deck of the ship is identical with the *tonnage deck*, the rule may be at once applied for obtaining from the under-deck tonnage an estimate of the total dead-weight capacity, including, in the case of a steamer, the machinery, boilers, water in boilers, and coals. The estimate of cargo can only be made by obtaining or estimating the deadweight of the engines, &c.; the allowance for propelling power does not, as is sometimes supposed, bear any relation whatever to the deadweight of the engines, &c. It is thus the case, that to obtain any approximation to the capacity of a steamer, much more must be known than can be obtained from the register. We have said that the rule only holds good when the *tonnage deck* is the main upper deck. The latter is usually determined by the frame-work of the ship, the side above it being of less strength than below. The terms *spar deck*, *hurricane deck*, and *awning deck* are used irrespective of the number of decks the ship may have, and refer only to structural peculiarities. The *tonnage deck*, however, is in all cases the second deck from below, and may be thus a deck below the main upper deck, or it may, on the other hand, be a spar deck. In the former case, the tonnage of the space between decks must be added to the under-deck tonnage, to obtain the tonnage under the main upper deck; in the latter, the tonnage between the decks must be estimated (for it cannot be obtained from the register), and deducted from the under-deck tonnage for that purpose. Even in small sailing ships, which have no erections on deck, the register tonnage is not a fair standard of comparison, because the gross tonnage, which in this case is the tonnage under deck, has had deducted from it an allowance for the space occupied by the crew. Owing to this circumstance, the owners of small ships of this class have been often unjustly suspected of overloading, and it is within the knowledge of the writer that so much is the imputation dreaded by them, that they have purposely abstained from qualifying for the crew space allowance, in order

that their register tonnage shall not be less than their under-deck tonnage.

The freeboard rule, based upon register tonnage, is an indirect application of the principle of freeboard of volume; various schemes have been proposed for fixing the freeboard at a definite proportion of the whole volume, and thus getting rid of the difficulty caused in the old rule by the varying thicknesses of the shells of ships. This may be done in two ways: the more direct one is to calculate the actual cubic content of the volume enclosed by the outer surface of the ship to the deck, and take a proportion of it as free volume, obtaining by means of a scale of displacement the height of free side, which would give the proportion. The second method is to do the same thing with the register tonnage, under the deck. This is, of course, not so exact as the former method, but is, probably, near enough for practical purposes, and a great advantage attending it is that, as has been said, we have the tonnage measurement of every ship at hand, but not the displacement measurement. Although the tonnage under deck does not bear a fixed ratio to the entire volume, owing to the various thicknesses of the side, in different classes of ships, a horizontal plane which cuts off a definite fraction of the former, also cuts off a definite fraction of the other, the two fractions being not very far different, and certainly bearing to each other what, for all practical purposes, is an exact ratio. We could thus, having by a series of experimental calculations, established the value of this ratio, depend that if we cut off a fraction, $\frac{1}{a}$ (less than $\frac{1}{2}$ of the tonnage, the same plane would cut off very nearly $\frac{1}{a\,m}$ of the displacement, m being a constant quantity, and very small. It would not be very far from the truth to say that a proportion of the tonnage above water would amount to much the same thing as the same proportion of displacement above water. We propose to describe the most important rules of freeboard of volume in the order in which they were proposed, showing how the author of each has attempted to meet the acknowledged difficulties of the question.

In 1870, Mr. Rundell, of the Liverpool Underwriters' Association and Registry, read a paper at the meeting of the Institution of Naval Architects, on the subject of freeboard of volume, containing a large quantity of most valuable information upon the question, and at the same time showing a wise reluctance to set up a positive rule. He stated that it had been suggested some years ago that three-tenths of the whole displacement under the upper deck should be above the water line, and gave a number of figures to show that this would give an average result not very far from the average of either the Liverpool or Lloyd's rule. He proposed to mark not this spot but one indicating the plane, which

would cut off one-fourth of the register tonnage, so that it might be seen by the distance of the spot from the water how much of the total volume was immersed. It was not intended that the total proportion should be fixed by law, only that such means should be adopted as would enable anyone to see the true state of the case.

In 1872, a proposal to fix a freeboard on a proportion of the register tonnage was made by Herr Mitzlaff, of Elbingen. The proportion was to vary with the voyage and also with the length of the ship. For European voyages ·24 of the under deck tonnage was to be above the water, for Transatlantic voyages ·273, and for longer voyages ·307. This was to be the scale for vessels whose length does not exceed five times their breadth, ships of from five to six times their breadth should have their freeboard increased one-twelfth, six to eight times one-sixth, and longer vessels should have the ordinary freeboard increased by one-fourth.

The methods proposed for actually calculating the freeboard in both of these rules were very similar. The whole under-deck tonnage of the ship was to be multiplied by the fraction representing the proportion to be kept above water. From this result was to be deducted the cubic content of the volume cut off by a horizontal plane passing through the deck amidships—that is, the cubical content due to sheer. The remaining volume in cubic feet was to be divided by the area of a horizontal section of the ship at the deck, the quotient giving the depth of freeboard amidships due to the given proportion of freeboard of volume.

The varying proportions of freeboard of volume, fixed by Herr Mitzlaff are said to be derived from "practical experience—inferred from ships whose lines, draught of water, and good behaviour at sea are known."

During the present year, and since public attention has been drawn to the question of the load line of ships, several proposals have been made to fix freeboard on the principle of a proportion of volume. Mr. Rundell, following up the course taken by him in 1870, has advocated the placing of a number of marks on a vessel's side indicating the planes which cut off given percentage of her volume.* He says:—"With the strongest conviction that the load-draught of any particular ship should be left to the persons immediately concerned, and that none of those parties should be specially protected by the State in making his bargain or engagement. I believe that the Board of Trade might, with propriety, be called upon to assume the responsibility of making certain marks on a ship's side, to represent certain facts in precisely the same way in which the Board now superintends the correct marking of the scale of feet on a ship's bow and stern, the cutting of the official number on the beam at the

* Mr. Rundell's paper is given *in extenso* in the *Nautical Magazine* for May last.

main hatch, or the insertion of the ship's cubical capacity on her certificate of registry."

There would certainly be no difficulty in doing all this, if it were deemed advisable, in the case of flush-decked ships, but before it could be done for others the principle upon which the volume of erections on deck should be dealt with must first be settled. Mr. Rundell proposes to move his points up in proportion to the heights of awning decks or spaces on deck. In the case of an awning deck, each datum point, as it is called, would be moved up a distance equal to one-fourth the height between decks. For poops and other erections upon deck he proposes to ascertain the mean height which would be given if their tonnage were spread all over the deck, and then take one-fifth of this height for the increased height of the points due to the volume of the erections. This rule is said to be derived from practical experience (at least so far as regards the awning decks); but does it not appear somewhat inconsistent that, while acknowledging the impropriety of fixing by law, the proportion of the under deck volume which should be above water, he yet proposes to fix the extra immersion which may be allowed for erections upon deck which certainly present as much diversity in construction as do the hulls of ships. It may, indeed, be said that many ships are of such general design that no erection upon deck would improve them, and that so their freeboard, without a poop, should be the same as with one; and, again, are not the strength, security, and position of erections upon deck of great consequence in determining their value as adding to the safety of the ship.

(*To be continued.*)

LIGHTSHIPS.

In the placing of lightships, or guiding marks of any kind, a high purpose is fulfilled: this we all know; but the means by which this purpose is successfully accomplished is, we believe, not so fully known and appreciated. We are enabled to record a fact which must give pleasure to all English people: viz., that among the fifty lightships round our coast, not one has broken from her moorings during the last fifteen years at least. In fair weather and foul, through storm and calm, for fifteen years, no lightvessel station has been deserted for five minutes, and, without intermission, every light has regularly shone out from sunset to sunrise, and fulfilled the object for which the vessel was placed. Cold-blooded people would probably

say, "Yes, that is very satisfactory;" but to us there is something in this fact which seems to demand rather more than a simple expression of satisfaction. It is extraordinary in these days to find such really efficient service. The notion which seems now to be prevalent is, that to have a service which shall be continuously efficient and trustworthy is almost an impossibility, when dependent chiefly on human watchfulness and care; and that mechanical and automatic arrangements alone will secure unfailing performance of duties. But in this lightvessel service we have something which, by its results, shows itself to be valuable, for neither accident nor negligence has, for more than fifteen years, caused a single break in the continuity of the service, and the consequent benefit to all ships which navigate the waters adjacent to our coasts.

We shall endeavour to suggest some of the chief causes of this efficient service, merely remarking, by way of preface, that the greatest danger to which a lightship is exposed is that of being run into and run down through carelessness and criminal negligence on the part of the crews of merchant steamers.

To begin with, a lightship is not a floating coffin, nor in any particular is she an unseaworthy vessel; she is never overloaded, and fearlessly rides out the most tempestuous weather. The present form of lightship is one that has been arrived at through years of experience as that most fitted for a stationary vessel. For many, many years careful eyes have been on the watch to discover if any improvement can be introduced; the experience of those who have to make their home in these vessels has for time out of mind been brought to bear to adapt the ship to her purpose; the trained knowledge of nautical men, who have spent most of their lives at sea, has assisted in developing the lightship; and now we have a strong, clumsy, and ugly craft, that lives in any sea, and defies the most furious waves. The period of service for each lightvessel is, moreover, limited; for every seven years she is brought in, and thoroughly overhauled, being replaced for the time by a spare lightvessel, kept for the purpose. When she is repaired, she comes back to her station, to go through another seven years of rolling and pitching.

Of course the two chief mainstays of a lightvessel are, her own inherent strength, and the manner in which she is moored, and it will be found that, if possible, even more care is bestowed upon the moorings than upon the hull. The anchor generally used for holding is a mushroom, weighing two tons; sometimes, in narrow channels, where there is little room to swing, or where the tidal currents are very rapid, two mushrooms, at some distance from each other, are used, attached by a length of ground chain, to the centre of which a riding chain holds the lightship. A two-ton mushroom will sink into the soft earth, and possess tremendous

holding power, but two tons is in itself almost sufficient to hold a ship even on a rocky bottom. But it must not be supposed that the lightvessel is ever allowed to drag or strain at her mushroom; that is one of the things most carefully guarded against. Every vessel has between two and three hundred fathoms of cable which she can use. In the worst weather she seldom veers to more than one hundred fathoms, but a great portion of the chain is made to act as a spring. As the vessel mounts the highest wave, she drags up as much cable as she wants, but it never becomes taut between herself and the mushroom, because a surplus quantity is allowed to remain on the ground, and the simple weight of the cable is sufficient to keep the vessel in position. Considerable judgment on the part of the officer in charge of the lightship is required to regulate the amount of veering cable in bad weather, so that the vessel may surmount the great waves, and yet maintain her position. A lightvessel's cable is subjected to a very severe test before made use of,—a strain of thirty tons is applied to each link, and while under the process, it has to undergo a considerable amount of hammering.

In addition to these moorings, there are two fluke anchors provided, to one of which a length of cable is always shackled in readiness, so that if, by any unforeseen casualty, the vessel parts from her ordinary riding-chain, the best bower can be let go at very short notice, and the vessel brought up again; and still they have in reserve the starboard anchor, to which they can readily attach the remaining piece of cable which was left when the vessel parted, of which they would be sure to have over 100 fathoms.

The lights to be shown by these ships at night are of course the most important feature of their existence; and here, too, we find the greatest care and forethought exercised to prevent anything like uncertainty or failure. The mechanism for revolving lights is always in good condition; but still there is provision made in case the apparatus should get out of order. Everything is at hand to enable the crew to keep the lamps and reflectors clean and in good condition. The men cannot complain about their tools; the oil room is a pattern of cleanliness and convenience, and there are spare lamps, reflectors, cylinders, &c., always ready for cases of emergency; besides this, there is always a plentiful supply of stores, although a very strict account has to be given of their expenditure.

It may fairly be said that the whole of the equipments of a lightship are destined to be of practical service. One does not find on board any fancy notions or theoretical improvements which endanger the vessel's safety. Its great globes, its scanty rigging, its plain unornamented but solid appearance, its gong, windlass, and carronades, all testify to the ship being meant for service, and well designed for it.

No doubt many of our readers will feel that matters can hardly be so perfect as might be supposed from our remarks, but, without wishing to ignore faults, which probably do exist even in the lightvessel service, we are now merely endeavouring to account for the admirable results obtained, and as the success of the service is certainly not due to its faults, we shall not now look for them.

The human element in the actual working of lightvessels is also worthy of remark. Each ship has a crew of eleven men—a master, a mate, and nine seamen, but seven only are on board at a time. The master and mate have alternate months ashore, and each seaman has two months afloat, and one month ashore. There is no difficulty in obtaining good seamen for the lightships on our coasts; the advantages are considerable —good pay, increasing with length of service, prospect of promotion to mate and master, uniform clothing, medical attendance, and, when too old for work, a pension proportionate to the length of service. Very many of those who enter settle down, and quietly work their way up to the higher posts, but the lightvessel service is no place for the restless, thoughtless, and devil-may-care sailor. The nature of the duties requires steadiness, punctuality, watchfulness, strict obedience to superiors, and careful attention to instructions. Negligence of any sort cannot be tolerated, and is not allowed to pass without a severe reprimand; wilful disobedience, or gross carelessness, entails summary dismissal. But, as a rule, the men grow into the service, as it were, and it becomes their pride to perform their duty creditably. They take great pleasure in having all things on board scrupulously clean and in proper order, so that whenever any of the authorities visit them, it may be recorded in the order-book that the ship was found "clean and in good order." The men, as a class, are not remarkable for that intelligence which would enable them to pass a Civil Service examination, the life on board is not conducive to mental energy; but, nevertheless, they know how to obey orders, and in an especial degree do they possess the qualifications of dogged courage, hardihood and interest in their occupation, the exercise of which enables our lightships to ride through the fiercest storms, and continue to carry out their purpose of aiding all other sailors and people at sea. It is probable that the full significance of the service he is rendering to humanity never enters the mind of the weather-beaten lightsman, as he stands by to attend to the cable or the lights of his vessel, but he has at least a noble conception of duty. Vague notions may haunt him as to the use other sailors make of the lights he guards, and a dim sort of sympathy with his brother mariners may to some extent stimulate him in his work, but duty is the prime mover which awakes his dormant energies, and stirs him to active and willing efforts to ensure the vessel being maintained in her position, and the lights

"kept constantly burning bright and clear from sunset to sunrise." Picture to yourself, reader, a handful of resolute men, in the midst of the tempest, with difficulty maintaining foothold on the wet decks, the ship rolling as only a lightship can roll, the wind roaring and the seas constantly breaking over the vessel, the five or six men busy at the windlass, working with all their strength. For what purpose? Simply to keep the lightship in her proper place, so that other ships from across the sea may find her there, with her lights shining, to guide them, may bless the humane spirit that caused her to be placed, and the brave, honest efforts of those who keep her there.

But this sense of duty, from what does it spring? It is undoubtedly strong in the crews of our lightships, and the results are grand. The *Nautical Magazine* does not dare to rush into the mysterious domains of ethics or metaphysics, but is contented with a few useful and patent facts; and they are offered to the reader as part of the answer to the question, whence springs this sense of duty? The men in the service are subject to a strict discipline: "Implicit obedience and respect are required from the crew of the vessel to their officers, both afloat and on shore, and any person disregarding this order will be liable to instant dismissal." So runs the second regulation. The men are promoted according to length of service and good behaviour. The men are well paid and well cared for. They have not a multiplicity of various duties crowded upon them. Constant inspections are made by the authorities, who are nautical men who *really know* the practical necessities of a lightship, and how things ought to be on board. In a word, the seamen believe in the men who direct and govern the entire service, and "implicit obedience" to orders is consequently easy. Whatever ill-informed people may say unquestionably about the Elder Brethren of the Trinity House, at least this honour is due to them, that they have organised and perfected a service which may be justly said to be second to none in point of efficiency and adaptation to its purpose. The *matériel* of the service is excellently maintained by means of diligent and careful supervision; the *personnel* is most effective by reason of the men's confidence in those who rule them.

Here is an illustrious example for shipowners. We commend the facts to them, and desire to assert our conviction that if they would look after their ships as lightvessels are look after, and manage to make friends of their sailors, maintaining at the same time a proper discipline, their ships would be better manned and navigated, and the shrieks of frothy enthusiasts about seamen's wrongs would fail to excite public sympathy in the manner it has unfortunately done of late.

SEAMANSHIP ON BOARD STEAMERS.

To the Editor of the Nautical Magazine.

SIR,—In reading an article in the February number of the *Nautical Magazine*, entitled, "Rambling Notes by an Old Contributor," I was much astonished to see it stated that it is no longer of the slightest use to the officer of a steamer to know how to clench a cable or fit a truss; how to wear or clubhaul, to rig a bowsprit, or take in a mast. Chain cables and iron trusses have long since taken the place of hemp cables and trusses, and require neither clenching nor fitting. Yet I think a sailor is none the worse for knowing how to do either, because, in my opinion, it is essentially necessary that the officers of steamers should be thorough seamen, and should have served their apprenticeship and learned their profession in sailing ships. A notion appears to have got abroad that steamers can be navigated independently of seamanship, in which I should be very glad to share if fine weather, a smooth sea and steamers' engines could always be depended upon; but in the absence of these conditions I think it is only reasonable to maintain that steamers should have the very best of seamen for their commanders and officers. Steamers are always liable to break down and more frequently become disabled in foul weather than in fine; the safety of the steamer then depends on the masts and sails and on the ability of the master and officers to handle the ship. While it is the case that too many steamers are miserably insufficient, both in regard to masts and sails, it is still true that most of our large ocean steamers are heavily rigged and can be handled under sail as well as many sailing ships, and have been brought into port under sail when their engines have become useless. On the other hand, many steamers have been lost for want of the sail power necessary to render them manageable when deprived of their propelling power. But even in steamers that are lightly rigged, much can be done by an experienced officer that one who could neither wear nor clubhaul a ship would never think of. I have seen a ship with small masts and sails in proportion saved by good seamanship when her engines were disabled, and it appears to me only reasonable to hold that the less sail power a steamer has the greater the necessity there is for good seamanship. All seamen know that the position of greatest danger for any vessel in a gale is when she falls into the trough of the sea; in that position the finest steamer afloat is in danger, and in the case of many deeply laden steamers, with high bulwarks and much uncovered space in fore and main decks, with badly constructed skylights and stokehole companions, and only a few small scuppers to clear the decks of the

water shipped, it is certain destruction. When a steamer's engines are disabled in a gale, she loses her steerage way and falls off or comes to into the trough of the sea, and there she will remain with the seas tumbling into her until she founders, unless sail can be got on her, when she can be laid to the wind or got before the wind, as may be considered best. It is in circumstances such as these, that a seaman can make use of his sails and of his seamanship to some purpose. It is, in my opinion, a sad calamity for England that the standard of seamanship has fallen so low, and that seamanship is so little thought of. It is in our sailing ships, in the performance of their hazardous duties (always a pleasure to a real sailor), that our seamen acquire that disregard of hardship and danger, and that confidence in themselves for which they have so long been famed, and which can never be acquired in a steamer with pole masts or in fact in any steamer. I admit that much of the practical seamanship learnt in a sailing ship is seldom required in a steamer, yet it is a fact that a sailor trained in a sailing vessel is a much more useful man and more to be depended upon than one who has learned the little he knows in a steamer. For the same reasons an officer from a sailing ship will make the best officer for a steamer; he will be found more fertile in resources in an emergency and better adapted in every way to meet the great responsibility resting with the officer of a watch in a steamer.

I would recommend that all our seamen be made to serve four years in a sailing ship before being allowed to ship as able seamen, and I question if you will find a lad who has served such an apprenticeship who is not fully conversant with the four point bearing problem. Masters and officers take an interest in a lad when they know that they will profit by his services.

I am, yours, &c.,

A MASTER OF A STEAMER.

June, 1873.

Board of Trade Surveyors.—Mr. H. B. Watson has been appointed to the vacant Shipwright Surveyorship at Deal, where he will take up his duties after undergoing a little experience of routine duties in London. Lieut. Michael H. Smith, R.N.R., late of the Salvage Association, has been appointed Shipwright Surveyor at Greenock; and Mr. James Stewart has been appointed Shipwright and Engineer Surveyor at London. Mr. M. Wawn, the Surveyor for the Sunderland District has tendered his resignation.

SAFETY-VALVE COMPETITION.

"VIRGO" has decided to go into competition, and we have arranged for the actual trial of "Virgo's" valve, and of those which may be sent by the competitors who have challenged "Virgo." Each valve must be complete and ready to fit on to a boiler, and must be under lock and key, and must fulfil in the best degree the requirements of a locked-up Government valve, and must be provided with proper facilities for easing and lifting off its seat. The pins must be brass, or the levers bushed with brass; each valve is to be weighted to 60 lbs. per square inch, and the diameter of the valve must be three inches. Competitors should be careful to have the details of the valve complete before they send it in; and all valves should be securely packed, and sent, carriage paid, addressed to Samuel Sharrock, Esq., C.E., Hamilton Windsor Iron Works, Garston, near Liverpool, with the words "competition valve" written on the left hand corner of the address. A letter of advice at the same time should be sent to Mr. Sharrock, who has kindly consented to arrange and superintend the trial of the valves. We have also arranged, by Mr. Sharrock's kind permission, for other competent and practical engineers to be present during the trial. The whole of the valves must be delivered on or before the 15th day of September, 1878.

SABLE ISLAND LIGHTHOUSE.

SOME time ago we alluded to the gratifiying intelligence that the Dominion Government were at the present time erecting two powerful light-houses and steam fog whistles on Sable Island—viz., a light house and fog whistle at each end; and public notice has recently been given, of the lighthouse and fog whistle at the east end of the island being in full operation. We have recently been shown a letter from a person residing at the west end of the island, a distance of 22 miles from the lighthouse now in operation at the east end, in which it is stated that, at that time—viz., on the 18th of May last, there were over one hundred American fishing vessels in sight round the island, and that many of them not knowing of the existence of a light house on the east end of the island, supposed, from the immense power of the light, that it was a wreck on fire at the east end of the island. Looking at the light from the west end, the light appears to be an immense blaze, as large as a puncheon, and is easily seen 22 miles off.

The steam fog whistle at the east end, is also stated to be equally successful, as it has been heard 9 miles against the wind.—From the *Morning Chronicle* of Quebec.

A FOREIGNER'S VIEW OF THE CAUSES OF THE TROUBLES OF BRITISH SHIPOWNERS.

In a Danish paper, issued at Elsinore, we find the following remarks on the British shipping interests:—"It is not only that Scandinavian and German ships, on an average, are sailed cheaper than British, but the foreign shipowner is placed in a far more advantageous position as regards the discipline on board his vessel, and consequently the safety of his capital and profit. With British Parliaments and Boards of Trade untimely meddling and muddling with shipping property, the well-meant, but much abused, interest in 'Poor Jack's' welfare, the promulgating one law after another, all acting as drawbacks on the shipowner, and all tending to empty his pockets, without affording him any adequate protection where his interests are really imperilled, it has come to pass that the shipowner can hardly be said to be master of his own property. Shipowning, consequently, is looked upon as a doubtful investment, and both owners and captains (of British vessels) prefer to have foreign seamen on board their vessels instead of their own countrymen. British Consular authorities are tied by the instructions given them by the Board, and are without the power to inflict well-deserved punishment. If a sailor on board on a Norwegian vessel refuses to go in her when the master is willing to proceed, the seamen is sent home as a criminal and sentenced to a long period of imprisonment and loss of wages. In the eyes of the law the master's willingness to go with the vessel guarantees her to be seaworthy. On the contrary, the trifling leakage of an English timber-loaded vessel, or a simple substituting of one class of provisions for another, is very often used in a shameful way by 'poor Jack' as a pretext for putting owner and captain to heavy expenses, trouble, and vexation, and causing the vessel to be detained for days. These are things that are never dreamt of, and would never be permitted, on board a Scandinavian or German vessel."

"City of Washington."—This steamer was one of the Inman line. She was wrecked on her 251st passage across the Atlantic. So great was the confidence of the owners, that they were, we learn, their own insurers to nearly the whole value. The master had made the voyage after the second or third day out by dead reckoning. The ship has gone, but the crew and passengers are all saved.

H.M.S. *CONWAY*.—OFFICERS TRAINING SHIP.

PROGRESS is the order of the day. All parties in the State seem willing to "move on" within reasonable limits, and this forward, upward, and onward tendency is visible in every direction. The recent visit of the Right Hon. Chichester P. Fortescue, M.P., President of the Board of Trade, to Liverpool, for the purpose of distributing the prizes on board the school frigate *Conway*, calls public attention to the gratifying fact that in our Merchant Service we have conspicuous evidence of improvements in harmony with the spirit and requirements of the times. Mr. Fortescue's journey to the North was not in vain, nor was the right hon. gentleman's kindness, in all that he said and did whilst on the banks of the Mersey, thrown away upon an unappreciating public. He became so popular in his short visit, that we have heard that some influential gentlemen really wished to make a "Tory" of him. The shrewd, hard-headed folks of that stirring locality seem to have been unanimous in their commendation of the manner and matter of all the President's utterances, and therefore we may venture to augur well for the results to the good ship *Conway*, and likewise to the shipping and general trade interests of the community, of this personal contact of the crown minister with those over whom he has so large an influence. Our present purpose is simply to write a few lines in reference to the mission of this excellent institution—the school frigate *Conway*. It is now about fourteen years old, is quite self-supporting, and would appear to gain strength in its operations from year to year. Originally designed, as stated by Mr. Fortescue, by shipowners, and to a large extent by master mariners, members of the Mercantile Marine Service Association, with a view to the raising of the profession and position of officers in the service beyond the point it had reached in their own days, it has gone on in increasing utility to the present time. Patronised by Her Most Gracious Majesty from the very first, and receiving the greatest encouragement from time to time from their Lordships of the Admiralty, and unusual support and sympathy from the public at large, its course could scarcely have been otherwise than smooth and successful.

The ship is commanded by Captain Franklin, R.N., of whom it is quite unnecessary to speak, and, in his energetic labours, he is ably assisted by a most excellent staff of masters and officers, including the chaplain, the Rev. W. F. J. Hanbury. The boys, numbering between 120 and 130, are noteably a very gentlemanly set of lads, and the work of the school goes on cheerfully and satisfactorily to all concerned. The health and discipline of these young sailors is quite as much considered as their general proficiency in school work.

Thus, in these days of ever-increasing emigration and of huge ships and valuable cargoes, we have growing up a class of young men to serve as masters and officers of our splendid Merchant Navy, well fitted to discharge, with the highest efficiency, the onerous and honourable duties involved in modern sea-service. The really useful bit of work of the Mercantile Marine Service Association in starting this ship, shows how valuable are properly directed energies exerted for the good of our Mercantile Marine. It was one thing, years ago, to go down to the sea in ships, at most, of a few hundred tons burthen; it is quite another matter now-a-days—to command a magnificent Atlantic steamer, and to be the host, as it were, of a floating mansion conveying from coast to coast the most influential and educated of our time.

The sea, as Mr. Fortescue well said in his speech to the boys, a speech full of sound, manly common sense, and free from the "Goody, Goody," twaddle that many well-meaning and otherwise respectable persons feel somehow bound to utter on such occasions—the sea in these days of over-crowded businesses and vast competition is a line of life worthy of high and gentlemanlike feelings and cultivated minds, and it is to make our young men worthy of the sea, that the *Conway*, and her sister ship in the Thames, the *Worcester*, were established. Mr. Fortescue further spoke to the boys of the most admirable influence they might exercise upon that great body of English sailors it would one day be their fortune to command.

These training ships value and appreciate the encouragement they receive in the highest quarters; and those in authority well know that such institutions not only desire, but really deserve the support that is so readily accorded to them. In this view *Conway* and *Worcester* cadets are privileged to receive appointments as midshipmen in the Reserve and to wear Her Most Gracious Majesty's uniform.

We propose to give a notice of the *Worcester* next, an establishment in every way deserving confidence equally with the *Conway;* but as the *Conway* is the first of these ships in which the President of the Board of Trade has distributed the prizes, and as the old *Nautical* has always, during its career, appreciated the efforts of those respectable and respected gentlemen who form the Department over which the right hon. gentlemen so ably presides, we have felt bound first to notice the ship that has honoured him, and that he has honoured at a time when the pressure of the business of the Session might fairly have formed an excuse.

SCURVY AND ITS REMEDIES.

THE case of the *Kirkland* having once more brought the subject of scurvy to the fore, and having for some time past resolved to respond, to the best of my ability, to the invitation of one of your correspondents in a number of last year, I now do so, and being neither one of "our own correspondents," nor an author, but simply a shipmaster, I must beg you to excuse the want of succinctness in what I have to say on so important a subject.

First let me present my credentials. I have had twenty-four years of sea life, eighteen of them in a trade which, perhaps, with the exception of the whaling, has more of the conditions to produce scurvy than any other known to the West Coast of Africa. During sixteen of those eighteen, I was master.

Further, my crew, my officers, and myself have had scurvy, which is contrary to a statement in one of our periodicals of very large circulation, that a case of scurvy was never known in a ship's cabin.

I believe that the Giver of all good has in His wisdom ordained that His creature, man, should subsist not only on animal food, but on "the fruits of the earth," which I take to mean a large portion of the vegetable kingdom. The result of any departure from this beneficent law will be disease, and its extent in proportion to the departure. When, as in some voyages, it is very wide indeed, the result is a deterioration of the blood, finally resulting in scurvy, or a partial death of the tissue.

The discovery of the anti-scorbutic properties of the lime and lemon, has been the salvation of thousands of lives, and prevented still more cases of scurvy not fatal. My faith in it as a remedy is, I know, opposed to that of some of my professional brethren, but, from practical experience, I believe were *pure* lime-juice served out on *all* foreign voyages strictly and without fail, as the Act of 1867 directs, scurvy in the Merchant Service would be unheard of.

In 1850, I made a happy voyage from Liverpool to Calcutta in a Sunderland ship; she was named after the head of a firm of shipowners in the latter port, as highly honoured as they were, and are, well known. All honour to them I say. She was a good ship, well found in every respect, and amply supplied with provisions of the best quality. Still, scurvy just showed itself. In the Bay of Bengal, an Austrian sailor began to complain very much of sore gums, while his flesh assumed that dreaded puffed, pasty appearance. Off Sangor Island, a dingy came alongside, and among other things in her was a basket of oranges. In a corner of my chest I had a stray sixpence, which I invested in these oranges for Antonio's benefit, and, I must say, he showed more discretion

than generosity in the matter; he quickly transferred the lot to his chest. I, the donor, never tasted one, and as the said chest had a lock which struck a gong six times before it could be opened, and had elicited much —well, *strong* language—from the watch below during the passage, any felonious intentions on the part of others were thwarted, and the result was Antonio had the *full* benefit of the oranges, and on reaching Calcutta (six days) was nearly well. There, an ample supply of fresh meat and vegetables did the rest. I am inclined to think the whole crew ate more vegetables in Calcutta than in Liverpool, for there was no sign of scurvy on the homeward passage.

This little circumstance of the oranges fixed itself on my memory, and was of service to me in after years, when I was master instead of O.S.

In 1861 I sailed for Africa in a well-appointed little barque, on a voyage which lasted ten months. We had an ample supply of fresh meat, potatoes, vegetables, preserved meat, soups, potatoes and compressed vegetables. We all returned with scurvy, one a hospital case, and I, the master, besides having my share of scurvy, was very much emaciated, and my blood so poisoned, that I subsequently narrowly escaped with my life from an attack of acute rheumatism.

How did this state of things come about? Potatoes will not keep in the tropics, consequently our stock was regulated to last the outward passage only. On our arrival out, the yam season was just over, no other vegetable to be had, and the only kind of fresh animal food, the worst kind of pork.

As to our own resources, I have no faith in the efficacy in such a case, of *preserved* meats, potatoes, compressed vegetables, &c. If I may be allowed to trench on chemistry, I should say the "vital principle," the "liquid potash," was dried out of them. Be that as it may, they were freely served out with us, and did us *no good*.

How about our sheet anchor—lime-juice? These were degenerate days in this respect. A liquid styled lime-juice had been put on board. It may have been diluted sulphuric acid, or not; one thing was quite certain, *it was not lime-juice*. As in the case of the yams, it was not the season for limes either. I was gathering experience, but of rather a painful kind.

In 1866, I again sailed on a voyage to Africa, which lasted twenty-three months, and, with one exception, my crew landed in, to all appearances, good health. This exception had sore gums only, and I found had had a very severe attack of scurvy on the previous voyage. How was this?

I watched every opportunity to get vegetables, regardless of price. These opportunities were very rare indeed. Africans are not gardeners, except as to rice, corn, and yams. The few vegetables to be obtained are from the gardens of civilized residents, and I know only of two

places in 800 miles of coast line where even very small quantities are to be bought at exorbitant prices.

When yams were to be had, I availed myself of them to the utmost. I cultivated a small garden on shore, and obtained at least some cabbages, lettuces, and onions. While they were in season, I sent oranges on board, so that each man could have at least *two daily*. Lastly, distrusting home-made lime-juice, I bought limes in considerable quantities, expressed the juice, bottled it, dropping a little olive oil in each bottle, which excluded the air. This I frequently served out, without regard to legal requirements. I should have mentioned that I obtained a supply of shallots, a very valuable auxiliary. These were the means adopted, and I met with a fair share of success.

On my return to England, I found the beneficent Act of 1867 had been passed, and I saw at once that, if only carried out in its integrity, here was the remedy for scurvy. But is it? I say no, most emphatically. I carried it out for the two long voyages I subsequently made, to, as I think, the satisfaction of every one on board. I tried hard to get some of my friends to adopt similar plans to my own, but with indifferent success. It was not always their faults; in fact, the blame may frequently be distributed as follows:—

1. The owners.
2. The masters.
3. The men, themselves; but this latter applied more strictly to the period prior to 1868.

1. The owners. It was very difficult to get them to believe any such Act was in existence for a long time after it was passed. Some said, "It was all d——d nonsense, and they should'nt send any more of the stuff than usual." Others said, "It was fortified with sugar! and if they sent the lime-juice, they would'nt send any extra sugar." Every case of a dozen quarts requires 30 lbs. sugar. I had liberal and reasonable employers, who enabled me to carry out the Act in its integrity.

2. The masters. Many went to sea without knowing such an Act was in existence, and never glanced at the fly-leaves of their official log-books. They still acted according to the old Act, and that only after a fashion, for one actually told me he served out no lime-juice, but bargained with his crew to give them an extra glass of grog instead!!

Many to this day serve out to each man a tablespoonful of lime-juice and another of sugar, and let him do what he likes with it, which brings me to

3. The men. When served out like this, Jack comes along the lee-side of the maindeck at eight bells, often takes the lime-juice in his pannikin, and his sugar in his *fist*. On going forward, he pitches the lime-juice over the lee-rail, and transfers the sugar either to his pudding, or as a

reserve for his tea. I only write of what I have *seen* scores of times.

Again "cantankerous" Jack, and his is a very numerous class now, refuses to drink it. The late Act provides a remedy, I know, but once when I served it out from—well, an interested motive, I was not bound to—two of this class told me I was bound to provide them with vegetables, and lime-juice was no substitute, and they wouldn't drink it.

I need not here repeat the words of the Act, anyone can read it for themselves; but my brother masters must allow me to remind them that not only is one ounce of lime-juice and one ounce of sugar to be served out daily to each man, but it must be mixed with water in sufficient quantity to form a palatable beverage. This *can* be done, and with very little trouble, as I will show.

It puzzled me at first. My first difficulty was to get the lime-juice and sugar to mix readily and uniformly. After some experiments, I found 1 oz. lime-juice and 1 oz. sugar, brought to the simmering point over a fire, invariably produced 1½ oz. of syrup, so that a quart of the one (40 oz.) and 2 lbs. 8 oz. of the other, warmed in a soup bouilli tin, kept for the purpose, produced 60 oz. of syrup, enough for 10 men for 4 days. I must here say this was with loaf or refined sugar, as I had no other on that voyage. If different results occurred with brown sugar, measure the resulting syrup, and add enough hot water to make the number of ounces double that of lime-juice, it would be 80 in the above case. I must be excused if I remind some that they ought to have imperial measures on board from a quart to an ounce, and again that an imperial gallon is 160 oz., a quart 40, pint 20, &c.

I always mixed it so as to run out a ½ pint (10 oz.) to each man.

Take a crew of 15 men to be provided for, thus:—15 × 10 = 150 oz. which would be 3 quarts (120), 1 pint (20), and ½ pint (10).

Of this, in my case, 22½ oz. would be syrup, and 127½ water. This was the plan. Into a clean bucket, kept for the purpose, we put, first, 1 pint (20) syrup, and then into the ½ pint, first, 2½ oz. (½ gill) syrup; then filled up with water, and then 3 quarts water. This, with a slight stir, provided each man with ½ pint of a refreshing beverage, like cider. We mixed the syrup twice a week for eighteen months, and the lime-juice *every day*, for the same time (calm or hove to), and thought it no trouble. Jack drank it eagerly, and said "he would sooner go without his dinner than without his lime-juice."

When the Act first came into operation, the corks of the bottles of lime-juice had labels pasted over them, bearing the inspector's signature; lately, I have seen some without. If there is any laxity on this point, once more the Act will become a dead letter. I trust not.

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It is a grand thing to enter our channels, after a long voyage, with an

able-bodied crew, and well worth trouble and expense. That there are ships which do not return home under such happy conditions, and that there are masters who will not take the trouble to secure them, even if their number be few, is evident.

Let me beg of such, for their own sakes, for the sake of their employers, and for the sake of humanity, to carry out the intentions of this Act, and if they can add vegetables, whenever and wherever they are to be had, and even ripe, wholesome fruit, they will be repaid in more senses than one.

NAUCLERUS.

STEAM SHIP BUILDING, 1873.

Place.	No. of Ships, March Qrtr.	No. of Ships, June Qrtr.	Tons Gross, March Qrtr.	Tons Gross, June Qrtr.
Clyde:				
Glasgow	25	24	45,490	47,326
Greenock	—	6	—	14,127
Port Glasgow	2	9	715	11,351
Sunderland	28	23	84,065	26,662
Tyne:				
Newcastle	16	17	21,120	23,393
North Shields	11	11	5,740	4,667
South Shields	5	4	2,978	3,648
Liverpool	8	11	9,587	11,572
Dundee	4	1	4,529	1,579
Hartlepool	8	3	3,865	3,360
Aberdeen	4	2	3,536	592
London	7	2	2,735	4,017
Belfast	1	—	2,652	—
Stockton	2	8	2,584	2,719
Kirkcaldy	1	1	2,019	425
Middlesbro'	2	4	1,860	5,766
Hull	3	3	1,543	2,472
Leith	1	—	1,400	—
Bo'ness	1	1	1,080	1,116
Whitehaven	—	1	—	1,002
Other Ports	4	9	524	1,654
Total	128	135	147,972	167,448

ON AN ARTIFICIAL HORIZON FOR SEA USE.

About ten years since, being engaged in rating chronometers by altitudes, taken with a sextant, I felt the discomfort of anxiously waiting whilst the mercury in the common artificial horizon became still; and sometimes I have lost my sights through clouds intervening, whilst so waiting. I had little back accommodation to my house; the few feet I had was so built around that nothing could be done there, and for various reasons I could not take my instruments into the streets; so I was obliged to have recourse to the top of my house, and everyone who has tried knows how very difficult it is to get steady mercury on an elevated position. Every passing vehicle, even in a distant street, every opening and closing of a door, every going up and down stairs, contributed to my difficulty; and I was driven to observations of stars for my purpose, because of the greater stillness which prevailed in the night. But even then, every puff of wind, and a thousand other causes, set up a series of small waves which prevented me taking such observations as I wished. The old proverb says, "Necessity is the mother of invention," and so it was in my case, because I was led to endeavour to devise some plan to obviate my difficulty; and talking one day with the late Commander Walker, R.N., on the subject, he suggested floating glass; but at the same time expressed his doubt as to the accuracy of the results. I immediately had a small box, about four inches square and about three-quarters of an inch deep, made in the usual way for an artificial horizon, with well and hole for filling it, to prevent scum getting on the surface of the mercury. I then procured a piece of the best glass used for optical purposes, with its two surfaces perfectly plain and parallel, and very nearly as large as the interior of the box, and placed it swimming on the top of the mercury; when, lo, the whole difficulty of tremor and minute waves was solved; for even after a sharp blow on the table on which I used it, the mercury became instantly steady. I certainly saw two reflections, one from the upper surface of the glass, the other from the surface of the mercury, but by using the brighter of the two, there was no difficulty of observation left. My next work was to test its accuracy, and then I found myself as far behind as ever, for I could never depend on any sights I had taken. But to me the greatest difficulty seemed surmounted, and I was led to think on the cause of my failure, thus hoping to remove it. I came to the conclusion that it was owing to the want of homogeneity in the glass, by which one side sank deeper in the mercury than the other, and thus I had not got a horizontal plane. From my slight knowledge of the difference of specific gravity in substances caused by unequal cooling, &c.,

I thought it would be impossible to obtain a piece of glass perfectly homogeneous; hence I turned my thoughts to some other method of overcoming the difficulty. The idea flashed on me that by taking an altitude with one side of the trough next me, and then taking another altitude with that side furthest from me, the mean of the two altitudes and the mean of the times ought to give me correct results. I was led to this conclusion from knowing that the horizontal plane bisected the planes of the glass in the two positions, and hence the true altitude would bisect the two observed altitudes, and therefore their mean would be the altitude required. I lost no time in testing the correctness of my conclusions, and found my whole difficulty was removed. In practice I always take six sights with the sides alternately reversed, and use their mean; and I have adopted this kind of artificial horizon with perfect success. To get rid of the double reflection spoken of above, I now use a piece of opaque glass with its faces perfectly parallel, and plane as before.

My object in writing to you is to suggest such an artificial horizon for sea use. Could not such an instrument be mounted in gimbals at a very small cost, and be carried by all vessels? On such places as the banks of Newfoundland, where fogs prevail for days to obscure the horizon, the sun may often be seen gleaming above; but he is useless for nautical purposes. Again, everyone who has been engaged in finding the position of the ship, knows that often a day may be completely overcast, whilst the night may be perfectly clear, still the sea horizon may not be seen with sufficient distinctness to ensure accuracy. Or the day may be perfectly clear, yet a swell on the horizon will vitiate results sometimes to a very large extent. All these difficulties would be removed by the use of such an horizon as the one described, and commanders of vessels would be independent of the sea horizon, whilst perfect observations could be taken by night as well as by day; and the personal equation, which in some observers is very great, would be halved. In conclusion, allow me to express a hope that some of our experienced masters of vessels will try the plan here suggested, and give his results in some future number of the *Nautical Magazine*.

LIST OF VESSELS WHOSE NAMES HAVE BEEN CHANGED.—*St. Andrew*, of Montreal, to *Waldensian*, of Montreal; *Amarapoora*, of Glasgow, to *Kwangchow*, of London; *Bladworth*, of Hull, to *Essequibo*, of London; *Gala*, of Glasgow, to *Fern*, of Glasgow.

SIX LECTURES ON LIGHT.

DELIVERED IN AMERICA, IN 1872-73, BY PROFESSOR TYNDALL, LL.D., D.C.L., F.R.S., &c. LONDON, LONGMANS. 1873.

THESE Lectures on light may aptly be described as luminous and lucid. Although the greater part of the information has been previously published, it may safely be affirmed that never before has the subject of light been placed before the public in so fascinating a manner as in the volume now before us. Divested as much as possible from technicalities, illustrated with clear and well executed diagrams, the book commends itself to the intelligence of the unscientific reader, as well as to the most philosophic mind. It has been too much the custom to treat scientific matters, either in a cold, dry, matter-of-fact style, or in an alphabetic manner, supposed to be adapted to the capacities of children. In neither of these methods can the average mind find any sympathy; they are devoid of life and spirit-moving power, and, consequently, science is feared and avoided by the multitude of readers. Dr. Tyndall, on the other hand, apparently endeavours to associate human interests with scientific knowledge; his acknowledged aim is "to develope and deepen sympathy between science, and the world outside of science." He further says, "I agreed with thoughtful men, who deemed it good for neither world to be isolated from the other, or unsympathetic towards the other; and to lessen this isolation, at least in one department of science, I swerved aside from those original researches which had previously been the pursuit and pleasure of my life." It is most difficult, if not impossible, for outsiders to comprehend the intense pleasure experienced by the experimental philosopher in following out his investigations. The love of, and search for, scientific truth is a ruling passion, and as the French philosopher Fresnel says, "I labour much less to catch the suffrages of the public than to obtain that inward approval which has always been the sweetest reward of my efforts. * * * * All the compliments I ever received never gave me so much pleasure as the discovery of a scientific truth, or the confirmation of a calculation by experiment." Thus we may see that Dr. Tyndall, in coming forward as a popular exponent of great natural truths, has a large claim on the public gratitude; he comes out of his laboratory, where his inclination and pleasure would fain keep him, with a fresh, sparkling truth, newly drawn from nature, by the aid of theory, followed by experiments, and throwing upon it the brilliant light of his descriptive power, he shows the world what the truth is, and what is its value to each and all of us.

We can well believe that the crowded audiences on the other side of the Atlantic listened in rapt attention to the eloquent discourses of the English professor, and many of our high-minded friends in the United States, no doubt, echoed his emphatic repudiation of the merely "practical", aims of scientific investigation; but we fear that the vast majority of Americans and Englishmen, likewise, are still blind to those joys of the intellect which our author would awaken, and will remain so, while they "love clothes, luxuries, fine equipages, and money." Dr. Tyndall's protest is, however, manly and outspoken, and will be appreciated by the nobler intellects of the world; let us hope, moreover, that it may not be altogether without its effect on some of those to whom it may be appropriately addressed.

We do not pretend to discuss the details of this work; we can only say that, since reading it, we have gained more correct notions as to the propagation and influence of light, and that the phenomena of reflection, refraction, and polarization, are all rendered much clearer to our understanding, and the revelations of the analyzed spectrum are wonderfully interesting.

Nautical men will do well to read these lectures; independently of their collateral bearing on the science of navigation (as regards, for instance, the colours of sky and ocean, the science of optics, the visibility of different coloured lights, &c.), they will find them charmingly written and eminently instructive.

PLIMSOLECISMS.—Mr. Plimsoll, in the early part of his agitation, expressed, in forcible English, his determination to crush some one in the Marine Department of the Board of Trade, whom, it was well known, he then characterised as the biggest rascal that walks. He has now flown at higher game and has determined to hurl the Ministry from power. At Sheffield he made a violent attack on the Government at a meeting held in support of his movement. He read a letter from Mr. Gladstone, in which the Premier pointed out that it would be disrespectful to the Commission to bring in a bill for the protection of sailors before they completed their task. This letter Mr. Plimsoll characterised as "*cruel, cold-blooded, murderous, and infamous.*" He hinted that the Government did not dare to bring in a bill, lest they should lose the votes of the shipowners in the House, and he appealed to the people of Sheffield to send Mr. Roebuck to Parliament again, that he might have the support of *at least one honest man.* Both the attack and the suggestion were resented by the audience. The Government was then, and is now, before the House.

HELIGOLAND.

After struggles innumerable, his Excellency Col. Fitz Maxse, the Governor of Heligoland, has succeeded in getting a submarine cable. The company is called the Hamburg and Heligoland Submarine Cable Company, and is German, with its head-quarters at Berlin, but, we believe, with English capital. Heligoland is thus practically annexed to Germany by means of English capital. The Heligoland end was laid by the little steamer belonging to the island, the *La Plata*, and the other end on the island of Neuwerk, in the Elbe. The semaphore station on the Island of Heligoland is finished. So far as we can learn, all that the British Government have done is to advance £3,000, which will be deducted out of the Parliamentary Grant for the island. It is expected that the semaphore station, and the cable together, will be of great benefit to British shipping; and possibly in the interest of our commercial marine some further grant may in the end somehow be obtained. Owing to the peculiar circumstances of the island, a steam-launch, and another coastguard man or two, are urgently needed; but it is difficult to find the money, although both the launch and the coastguard are really absolutely necessary to finish what the energy of the Governor has so nearly carried through. The last sensation in Heligoland is a question relating to the fisheries. The Hull and Grimsby, and other smacks, catch an enormous quantity of small fish in consequence of the size of the meshes of their nets. These small fry are killed by the meshes of the nets, and thrown wholesale overboard. There is a great cry about this, both amongst the Heligolanders and the Blankinese fishermen; and it would appear that some investigation and some understanding are necessary. To revert to the cable now laid. It will be of immense use to the Germans, as it will always keep them advised in the event of any fleet or strange sail approaching the mouths of the three great rivers, whilst it would be practically useless to us if we should want information which our cousins-German might not hereafter wish us to have.

MONTHLY ABSTRACT OF NAUTICAL NOTICES.

No.	Place.	Subject.
137	United States—Mobile Bay—Sand Island Light	Alteration in Light.
138	United States—Florida Strait—Rebecca Shoal	Establishment of a Beacon.
139	United States—New Jersey—Bergen Point lighthouse	Establishment of a Fog Signal.
140	Japan—Yezo—Cape Noyshap	Establishment of a Light.
141	Japan—Yezo—Nemoro	Establishment of a Light.
142	China—Yung river entrance—Tse-le (Square) island and Tiger island	Establishment of Fog Signals.
143	Adriatic—Cattaro Gulf—Castel-Nuovo	Establishment of a Harbour Light.
144	Sardinia—San Pietro Island—Point Colonne	Discovery of a Sunken Rock near.
145	Canada—Lake Ontario—Simcoe Island	Establishment of a Fog Signal.
146	West Indies—Great Bahama Bank—Gun Cay Light	Alteration in Light.
147	France—North Coast—St. Malo Bay	Discovery of Sunken Rocks.
148	United States—Cape Cod—Race Point	Establishment of a Fog Signal.
149	United States—Cape Cod .	Establishment of a Fog Signal.
150	United States—Delaware Bay—Mispillion River entrance	Establishment of a Light.
151	North Sea—Netherlands—Maas River—New Canal	Establishment of Leading Lights.
152	Gulf of St. Lawrence—New Brunswick—Miramichi Bay	Establishment of Lights.
153	Nova Scotia—Wallace Harbour—Mullin Point	Establishment of a Light.
154	England—West Coast—Holyhead Breakwater	Delay in Exhibition of New Light, &c.
155	Ireland	Alteration in Lights.

NAUTICAL NOTICES.

137.—United States.—*Mobile Bay.—Sand Island Light.*—On the 1st September, 1873, the following alteration will be made in this light, west side of the entrance to Mobile bay:—The present light will be replaced by a new light, exhibited from a tower in the middle of the island, and 230 yards W.N.W. from the present lighthouse. The light will be a *fixed white* light of the second order, elevated 132 feet above the sea, and should be seen 17 miles. The tower, 140 feet high, is built of brick, conical in form, and will be painted black. Position (approximate) lat. 30° 11′ 20″ N., long. 88° 2′ W.

Directions.—Being off the bar in 9 fathoms, bring Sand island lighthouse to bear N.N.W. ½ W., and steer on this course until over the bar, and in 4½ fathoms water, then steer N. by W. ¼ W. until Sand island bears west, passing midway between the island and Revenue point shoal;

the course from thence is N. ¼ E., passing Mobile point at a distance of one-third of a mile until Mobile point lighthouse bears S.E. ½ S.; then steer N.W. ½ N., between the West bank and the Middle ground, when the course is N. by W. ¾ W., 2 to 4 miles to the anchorage in Lower Fleet.

138.—UNITED STATES.—*Florida Strait.—Rebecca Shoal.*—An iron beacon, surmounted by a cylindrical cage, and painted black, has been erected on Rebecca shoal, Florida Strait; in clear weather it should be seen about 7 miles.

139.—UNITED STATES.—*New Jersey.—Bergen Point Lighthouse.*—A large fog bell, struck by machinery, has been placed at Bergen point lighthouse, entrance to Newark bay, which in thick or foggy weather will be sounded at intervals of *fifteen* seconds.

140.—JAPAN.—*Yezo.—Cape Noyshap.*—A light is now exhibited from a lighthouse on Cape Noyshap, east point of Yezo island. The light is a *fixed white* light, elevated 74 feet above the sea, and should be seen 6 miles. The tower, built of wood, is 31 feet high, and painted white. Position, lat. 43° 21′ N., long. 145° 45′ E. This light will be exhibited between the 1st April and 31st October in each year.

141.—JAPAN.—*Yezo.—Nemoro.*—A light is now exhibited from a wooden post on the N.E. extremity of Benten-sima, south-west side of the entrance to Nemoro anchorage. The light is a *fixed red* light, elevated 75 feet above the sea, and should be seen 6 miles. Position, lat. 43° 20′ 30″ N., long. 145° 35′ E. This light will be exhibited between the 1st April and 31st October, in each year.

142.—CHINA.—*Yung River Entrance.—Tse-le* (Square) *Island and Tiger Island.*—A fog bell has been established at the lighthouse at Tse-le, or Square, Island. In thick or foggy weather the bell will be sounded *once every fifteen seconds.* A gong has replaced the bell at the lighthouse on Tiger, or Pasyew, island, which in thick or foggy weather will be sounded *five times* in quick succession, at intervals of about *one minute.*

143.—ADRIATIC.—*Cattaro Gulf.—Castel-Nuovo.*—A *fixed red* harbour light is now exhibited from a lamp-post on the extremity of the new mole; it is elevated 20 feet above the sea, and should be seen 2 miles.

144.—SARDINIA.—*San Pietro Island.*—Information has been received of the existence of a sunken rock (Goffredo rock), with 12 feet water on it, between Point Colonne and Point Genia, south end of San Pietro island. It lies W. ¼ S. from Point Colonne, distant nearly half a mile.

145.—CANADA.—*Lake Ontario.—Simcoe Island.*—A fog bell has been established near Simcoe island lighthouse, Lake Ontario. In thick or foggy weather, or snow storms, the bell will be sounded *four*

times *in each minute*, and will probably be heard from a distance of about 4 miles.

146.—West Indies.—*Great Bahama Bank.—Gun Cay Light.*—In accordance with Nautical Notice No. 65 (March number), on or about the 1st August, the light will be a *revolving red* light, attaining its greatest brilliancy (as at present) *every minute and a half.*

147.—France.—*North Coast.—St. Malo Bay.*—The French Government has given notice of the existence of two sunken rocks in St. Malo Bay, in the channels leading to Port St. Malo :—

1. In the Chenal de la Petite Conchee is a pointed rock, steep to, with 8 feet on it at low water springs, it lies immediately off the west point of La Ronfleresse, with Grand Jardin lighthouse bearing W. $\frac{2}{3}$ S., the beacon on Les Pierres aux Normands, S. by E. $\frac{1}{4}$ E., and La Plate beacon S.E. by E. $\frac{7}{8}$ E. The leading mark clears it by only a quarter of a cable.

2. A rock with 2 fathoms on it at low water springs in the Chenal de la Grande Porte. It lies W. by N. (westerly) distant half a mile from Grand Jardin lighthouse, and nearly a cable from the leading mark passing through the channel.

148.—United States. — *Cape Cod. — Race Point.*—A first-class trumpet has been established at the lighthouse on this point, which, in thick or foggy weather will give *two* blasts of *four seconds'* duration each, with an interval of *eight seconds* between them and followed by an interval of *forty-four seconds.*

149.—United States.—*Cape Cod.*—A fog signal, consisting of a first-class Daboll trumpet has been established at the lighthouse on this cape, which, in thick or foggy weather, will give blasts of *eight seconds'* duration, with intervals between them of *thirty seconds.*

150.—United States.—*Delaware Bay.—Mispillion River.*—A sixth order *fixed white* light has been established near the entrance of this river; it is elevated 48 feet above the sea. The lighthouse is painted grey. Position, lat. 38° 56′ 40″ N., long. 75° 18′ 30″ W.

151.—North Sea.—*Netherlands.—Maas River.*—The channel between the moles of the Canal through the Hook of Holland is now marked by two leading lights. The upper light is a *fixed* white light, 50 feet above the sea, and should be seen 7 miles. The lower light (765 yards from the upper light) is also a *fixed* white light, 20 feet above the sea, and should be seen 7 miles. The lights in line lead into the Canal, at the entrance of which the depth is $7\frac{3}{4}$ feet at mean low water.

152.—Gulf of St. Lawrence.—*New Brunswick.—Miramichi Bay.*—Two beacon lights are now exhibited on the south side of Sheldrake island. The lights are fixed *white* lights, nearly 500 yards apart, elevated

about 48 feet above the level of high water, and should be seen 9 miles. The beacons are painted white.

153.—Nova Scotia.—*Wallace Harbour.—Mullin Point.*—A *fixed white* light is now exhibited from this point, on the north side of the entrance to the harbour. The light is elevated 39 feet above the sea, and should be seen about 11 miles. The tower is a square wooden building, 25 feet high, and painted white. Position, lat. 45° 49′ 45″ N., long. 63° 25′ 16″ W.

154. —*West Coast.—Holyhead Breakwater.*—With reference to Notice No. 93 (May number), the new light on this breakwater will be exhibited about the middle of this month (August).

155.—Ireland.—In accordance with Notice No. 95 (May number), the alterations in South Arklow, Tuscar rock, Fastnet rock, Eeragh or North Arran and Inishtrahull lights have been made.

Charts, *&c., Published by the Hydrographic Office, Admiralty, to the end of July,* 1873, *and Sold by the Agent, J. D. Potter,* 31, *Poultry, and* 11, *King Street, Tower Hill.*

No.	Scale.		s.	d.
773	various	North Pacific—Olimarao, West Faiu, Pikelot or Coquille, Wolea, or Ulie Islands, &c., Caroline Islands	1	0
775	m = 0·59 / 2·85	North Pacific—Hall and East Faiu, or Lütké Islands	1	0
3304	m = 0·35	Norway, West Coast—Karmö to Bergen ...	2	6
997	m = 4·4	Japan—Yokosko Harbour, and adjoining Bays	1	0
770	m = 5·9 / 2·45	Japan—Tomo and Hime Sima Roads, Inland Sea	1	0
995	m = 3·95	Japan—Susaki and Nomi Harbours	1	6
2087	m = 0·29	Africa, South East Coast—Bashee River to Umtamvuna River	2	6
1319	m = 1·2	South America, West Coast—Concepcion Bay, Chili	1	6
928	m = 0·25	Sulu Archipelago — Sigboyé and Sibitu Passages	2	0
1219	m = 3·5	Africa, North Coast—Tangier Bay	1	6
1698	m = 14·7	England—Dover Bay	2	0
2088	m = 0·28	Africa, South East Coast — Umtamvuna River to Tugela River	2	6
279	m = 5·0	Newfoundland—Cape Rouge and Croce Harbours	1	6
1084	m = 0·8 / 16·0	Papua, or New Guinea—Astrolabe Bay and Port Constantine	0	6

OUR OFFICIAL LOG.

REPORTS OF DESERTION ABROAD.—IMPORTANT DECISION BY SIR EDMUND HORNBY.—The Board of Trade have received from H.M. Consul at Shanghai a report of proceedings instituted by him against the former master of the *Titania*, for having left behind one of his crew at that port upon the 16th February, 1872, without the sanction in writing indorsed upon the articles of agreement of the consular officer, in accordance with the requirements of the 207th Section of the Merchant Shipping Act, 1854. The facts of the case were as follows:—When the *Titania* was at Shanghai, in February, 1872, the seaman referred to, by name Charles Dunn, was in ill health, and left the vessel to go to the hospital, where he was found to be suffering from heart complaint, and at once admitted. The master was notified of the seaman's presence in hospital, and acknowledged the receipt of the information in a letter, in which he requested that the man might be sent on board. The matter was not reported at the consulate at Shanghai. On the morning of the 18th of the same month the *Titania* left the port, and upon arriving at Chingkiang the master reported Dunn as a deserter. An endorsement to that effect was thereupon placed upon the Articles. The *Titania* then proceeded to Hong Kong, and when there the master discovering that Dunn was on board a vessel in which he had been ordered a passage home from Shanghai as a disabled seaman, laid an information against him for desertion, and in the result Dunn was convicted, and sentenced to twelve weeks' hard labour. Upon a representation of the facts of the case from H.M. Consul at Shanghai, the seaman was, however, at once released. The Chief Judge of the Supreme Court of China and Japan (sitting as Police Magistrate), before whom the charge against the master was heard, held that a shipmaster is bound to report the fact of a seaman's desertion at the port where the alleged desertion takes place. In this case the master was adjudged to have rendered himself liable to the penalty consequent upon conviction of misdemeanor, whilst all expenses incurred on the seaman's account were, under the 213th Section of the Act above referred to, recoverable from the owners of the *Titania*. As regards the master, the magistrate, taking into consideration the representation of H.M. Consul, inflicted upon him merely the mitigated penalty of £5 with costs.

MARITIME LAW.

SEVERE PENALTY FOR NOT CARRYING HOME DISTRESSED BRITISH SEAMEN.—Proceedings have recently been instituted against the master of a British steamship for refusing to afford passages home to cer-

tain distressed seamen, in accordance with the provisions of the 212th section of the Merchant Shipping Act, 1854. The case was heard at Liverpool on the 5th and 6th June, and the facts of the matter are as follows:—A steamship, of about 1,400 tons register, put into Fayal on the 15th April last, when on a voyage from New Orleans to Liverpool, laden with cotton, and application was made to her master by the British Vice-Consul at the port, to afford passages to the United Kingdom to twenty-two distressed seamen. The master declared himself unable to comply, on the ground that every berth but one was filled, and that there was no place in which they could be put. It was, however, proved in evidence that two bunks at least were filled with gear; and it also appeared that while the crew numbered thirty-eight in all, the crew spaces, for which deduction was allowed from the tonnage, were certified to accommodate seventy-four men. The Court inflicted a fine of £50 with costs. There can be no doubt that many ships get spaces certified for seamen very far in excess of the requirements of the crew, and thus obtain a large reduction in the register tonnage; and Her Majesty's Consuls have been instructed to be guided to a certain extent in sending home distressed seamen by the difference between the number of hands on board and the number of men for whose accommodation the owner has obtained reduction from tonnage. It cannot be admitted that an owner is first to obtain reduction from tonnage on the ground that he wants the space for seamen, and having got the deduction on those grounds, is then to carry stores, or passengers, or cargo in the space, and to decline to carry seamen there.

Cruelty at Sea.—Edward Evans, master, and James Denwood, master of the brig *Albert*, of Liverpool, were charged with the murder of Antonio Francisco de Costa, a coloured seaman, while on a voyage from Liverpool to Bahia. It appeared from the indictment that on the 24th of December last, while the vessel was in St. George's Channel, the defendants dragged the deceased from his berth, where he was lying sick, to the pumps, struck him with a piece of wood, and afterwards lashed him to the wheel, where he was allowed to remain exposed to the weather for an hour, having no clothing upon him but a shirt and a guernsey frock, in consequence of which he died the same day. The jury, after a short absence, unanimously found Evans guilty of culpable homicide, and Denwood not guilty.—(High Court of Justiciary, Edinburgh, Feb. 24.)

Naval Court Enquiries.

23. *Fusi-Yama.* On the 10th June, 1873, a Naval Court was held at Port Said, under the Presidency of H.B.M. Consul, to enquire into a charge of mutinous conduct and disorderly behaviour preferred against

the boatswain and three seamen of the *Fusi-Yama*. The boatswain was ordered to be discharged and to have six months' imprisonment; two of the seamen were also discharged with one month's imprisonment, one of them being fined £2; a third seaman was fined £1 and was allowed to return to his duty.

Local Marine Board Enquiry.

9. *Tropic.* On the 31st May, 1873, at the Local Marine Board, Liverpool, an enquiry was made into a charge of incompetency and misconduct preferred against the chief mate of the *Tropic*. His certificate was suspended until he can produce evidence that his mind is restored to its proper balance.

Board of Trade Inquiries at Home.

88. *Staffordshire*, of Liverpool. Proceedings pending.

105. *Anglian*, of Dublin, abandoned 1st February, about 80 miles N.N.E. of the Longships. Inquiry held at Dublin, 20th May, before J. W. O'Donnell Esq., Captain Harris and H. Bone, Esq., as nautical and engineer assessors. The Court considered the leak was produced by accidental fracture of the discharge-pipe which passed through the starboard bunker, and believing that part of the vessel to have been inaccessible to the engineer, returned his certificate, as well as that of the master.

107. *Bard of Avon*, registered at Glasgow, abandoned at sea, 11th February, 1873. Inquiry held at Greenwich, 29th May, before J. H. Patteson, Esq., with Captains White and Wilson as nautical assessors. The Court exonerated Captain Liddell from all blame, but declared that the late master had been negligent, the cargo badly loaded, and the vessel was not seaworthy on leaving Pensacola.

108. *Margaret*, of Perth. Proceedings pending.

112. *Russell*, of Arundel, stranded 17th December, off the Northumberland coast. Inquiry held at Arundel, 16th June, before Thomas Evans, Esq., J.P., and Arthur Prime, Esq., J.P., with Captains Steele and Hight as nautical assessors. The Court found that the vessel was lost by stress of weather, and exonerated the owner. Crew were all drowned.

118. *Wentworth*, of Newcastle, foundered seven miles from Outer Dowsing. Inquiry held 5th June, at Newcastle, before H. Milvain, Esq., J.P., and C. F. Hamond, Esq., J.P., with Captain Oates as nautical, and Mr. W. Darley as engineer assessor. The Court considered the master

guilty of gross carelessness, and censured him and his officers for their cowardly conduct. Master's certificate suspended for nine months.

116. *Thomas*, of Whitby, foundered near St. Abb's Head. Inquiry held at Sunderland, 23rd June, before George R. Booth, Esq., J.P., and Andrew Common, Esq., J.P., with Captains Oates and Nicolas as nautical assessors. The Court considered the vessel was unseaworthy, and acquitted master and mate.

118. *Whampoa*, of London, stranded at Lundy Island. Inquiry held, 10th June, at Greenwich, before J. H. Patteson, Esq., with Captains Hight and Harris as nautical assessors. The Court found that the master had evinced great care in the navigation of the ship, but he did not make due allowance for the rise of the tide. Certificate returned.

119. *Zeno*, of Hull, foundered 220 miles off the Scilly Islands, 13th May. Inquiry held at Hull, 11th, 12th, 13th June, and 8th and 9th July, before W. Wrangham, Esq., with Captain White and Mr. Darley as assessors. Court found that the gas was generated from the coal, and ingnited by a seaman entering the fore-peak with a naked light, and condemned nobody but the chief mate, whose certificate they suspended for three months, from 11th June, for not informing the master of the dangerous condition of the coals. Court recommended extensive ventilation for coal-laden ships.

120. *Isabella Sarah*, abandoned 55° 26′ N., 3° 3′ E., 5th January. Proceedings pending.

121. *Friends*, of Whitby, stranded off Oland's Lighthouse, 10th April. Proceedings pending.

122. *Catherine*, of Wexford, stranded on Crow Rocks, 18th May. Inquiry held at Wexford, from 24th June to 27th June, before J. Greene, Esq., J.P , and A. N. King, Esq., J.P., with Captains Forster and Wilson as nautical assessors. Master was found in default, but, as he held no certificate, the Court recommended that he should not be allowed to clear a coaster for six months.

123. *Active*, of Great Yarmouth, sunk 26th May, after collision in the North Sea. Inquiry held at Greenwich, 21st June, before J. H. Patteson, Esq., with Captain White and Commander Knox as nautical assessors. Casualty was attributed to the entire carelessness of the second mate of the *Iris*—the other vessel. The Court suspended his certificate for nine calendar months, from 21st June.

124. *Susannah and Elizabeth*, of Beaumaris, foundered near New Brighton, 9th December, 1872. Inquiry ordered 7th June, but subsequently abandoned.

125. *John Cock*, of Middlesborough, stranded off Saltfleet, 4th November, 1872. Proceedings pending.

126. *Emily Burnyeat*, of Whitehaven, stranded at Porcrassa Bay, 23rd March. Proceedings pending.

127. *Repealer*, of Newry, foundered off the Rock a Bill Lighthouse, 25th May. Proceedings pending.

128. *Llanelly*, of Llanelly, stranded on the Bishop's Rocks, 11th May. Inquiry held at Llanelly, from 28th June to 30th June, before W. H. Nevill, Esq., J.P., and D. A. Onslow, Esq., J.P., with Captains White and Commander Lillingston as nautical assessors. Court considered the master in default, for neglecting the lead, but, in consequence of his previous good character, suspended his certificate for three months only.

129. *Volunteer*, of Shoreham, abandoned in the North Sea, 18th November, 1872. Procedings pending.

130. *St. Columba*, s.s., of Dublin, struck on the Skerries, 21st June. Inquiry held at Dublin, 2nd, 3rd, 4th, and 5th July, before J. W. O'Donnell, Esq., with Captain Steele and Wilson as nautical assessors. Court considered the master had not taken sufficient care in the navigation of the ship. The plea that the compass on the binnacle was affected by the scythes of the harvest-men on board was quashed by the fact that the after-compass was not consulted. Master's certificate was suspended for nine months, from 5th July.

131. *Frost* and *Adrian Gertruida* came into collision off Texel, 25th May. Inquiry held at Greenwich, 9th July, before J. H. Patteson, Esq., with Captains Harris and Nicolas as nautical assessors. It was admitted that the steamer *(Frost)* was solely to blame, but as neither master nor mate held certificates, they could not be dealt with under the Merchant Shipping Acts. Court suggested for future legislation that steamers in the fishing trade should be in charge of certificated masters.

132. *Stornoway*, of Newcastle, stranded on Kentish Knock, 7th June. Inquiry held at Newcastle, 7th July, before C. F. Hamond, Esq., J.P., and B. Plummer, Esq., J.P., with Commander Knox, R.N., as nautical assessor. Court found that the master evinced great carelessness in the navigation of the ship, and suspended his certificate for six months. It also condemned the practice of employing non-licensed pilots.

133. *Biafra*, of Teignmouth, stranded about two cables length from Ramsgate Pier, 7th June. Proceedings pending.

134. *Empress of India*, Liverpool, stranded 6th June, on S.E. of the Knock. Inquiry held at Liverpool, 7th July, before T. S. Raffles, Esq., with Captains Harris and Hight as nautical assessors. The master mistook the colours of the buoys, and it was with great regret, considering his excellent character, that the Court suspended his certificate for three months, from 6th June.

135. *Fiery Cross*, of Leith, stranded on the Black Rocks, 5th June. Inquiry ordered 25th June, but subsequently abandoned.

136. *Yarburgh and Odessa*, came into collision 6th June, off Spurn. Proceedings pending.

137. *Sunshine*, of Liverpool, given up as lost between that port and Nova Scotia. Proceedings pending.

138. *Patrician*, of Newcastle, abandoned; date and place unknown. Found 20th November, 1872. Proceedings pending.

132. *Thomas Gales*, of South Shields, supposed to have foundered near Dudgeon Light, 9th December, 1872. Inquiry ordered 1st July, but subsequently abandoned.

140. *Emma Little*, of Rochester, sprung a leak, and foundered off C. Grisnez, 12th June. Proceedings pending.

141. *Esperia*, of London, stranded 13th June, on Mugie Rocks, Aberdeenshire. Proceedings pending.

142. *Mermaid*, of Grimsby, stranded 31st May, on Aldborough Beach. Proceedings pending.

143. *Bridemaid*, of Jersey, stranded 2nd June, off Barfleur Lighthouse. Proceedings pending.

144. *Clarinda*, of Sunderland, stranded 16th June, on Goodwin Sands. Inquiry held at Greenwich, 11th and 14th July, before J. H. Patteson, Esq., with Captains Hight and Oates as nautical assessors. Court suspended master's certificate for nine calendar months. They could not admit the master's excuses that the compass was in error, and that he had not a chart of the sands, for the weather was fine and clear, and the lights and buoys were all favourable to navigation.

145. *Brancepeth*, of Liverpool, stranded on South Banks of Texel, 16th May. Proceedings pending.

146. *William*, of Exeter, foundered off Orfordness 1st July. Inquiry held at Exeter, 15th and 16th July, before C. J. Follett, Esq., J.P., and J. Damerel, Esq., J.P., with Captain Nicolas as nautical assessor. Court considered the vessel to have been unseaworthy on leaving port, did not believe the master acted with judgment, and recommended the adoption of some system to secure better command of coasters.

147. *Chillingham Castle* passed the Downs, 20th November, 1872, and has not been heard of since. Proceedings pending.

148. *British Banner*, of Newcastle, stranded on Sunk Sand, 27th June. Proceedings pending.

149. *Caldera*, of Swansea, master accused of having set fire to his ship after collision with the *Canning*, of London, off Cape Horn, 8th April. Proceedings pending.

150. *Duchess of Sutherland*, stranded on the rocks off Holyhead, 21st June. Proceedings pending.

Inquiries Abroad.

164. *Fidela*, stranded near Cape Receiffe Lighthouse, 7th April. Inquiry held at Port Elizabeth, before A. Wylde, Esq., with F. Skead, Esq., R.N., as nautical assessor. The Court considered the vessel had been badly navigated, and suspended the master's certificate for six months from 29th April.

165. *Canning* and *Caldera*, came into collision, 8th April, off Cape Horn. Inquiry held at Stanley, in the Falkland Islands, before A. Bailey, Esq., and W. Fisher, Esq., R.N., J.P., and Captain Foster of the British ship *Egeria*. The Court deemed both vessels blameworthy, the *Canning* chiefly, for not showing lights, and the *Caldera* for keeping away before she was certain of the *Canning's* course.

166. *Wanja*, of Hong Kong, stranded on the coast of Japan. Inquiry held at Kanagawa, before R. Robertson, Esq., H.M. Consul; E. S. Nuthall, R.N., of H.M.S. *Rinaldo;* and Capt. Gaby, of the P. and O. steamer *Malacca*. The Court exonerated the master, but considered the vessel was unseaworthy on commencing her voyage.

167. *Bernice*, of Liverpool, burnt, 22nd March, in lat. 18° 25′ N., long. 72° 15′ E. Inquiry held at Bombay, 4th April, before J. Connon, Esq., and Capt. J. E. Betham, master of the ship *Princess Somerwathy*. The Court held that the fire was caused by the spontaneous combustion of the coals.

Royal Navy and Royal Naval Reserve.

Abbreviations.—Ad., Admiral; A., Assistant; C., Captain; Cr., Commander; C. Chief; Cl., Clerk Cn., Chaplain; D., Deputy; E., Engineer; F., Fleets; H., Hospitals; I., Inspector; L., Lieutenant; M., Midshipman; N., Navigating; P., Paymaster; r., Retired; S. L., Sub-Lieutenant; Sn., Surgeon; St., Staff; N. Inst., Naval Instructor; 1st Class A. E., 1st Class Assistant Engineer; 2nd Class A. E., 2nd Class Assistant Engineer; N. Ct., Naval Cadet; Ng. Ct., Navigating Cadet; R. N. R., Royal Naval Reserve.

Promotions.—**St. Cr.**—Henry J. Stanley, 1863 (acting). **N. L.**—John W. M'Farlane, 1866; John G. Scott, 1866; Augustus Fane, 1866; George W. Balliston, 1866. **C. E.**—James Dalton, 1862. **2nd Class St. Sn.**—Henry Rickard, 1860; William E. Dillon, 1860; George Mair, M.D., 1860; John S. Dobbyn, 1860; John Mulvany, 1861; John Lambert, 1862.

Appointments.—**C.**—Francis R. Purvis, 1866, to *Amethyst;* William Graham, 1863, to *Resistance;* Charles L. Waddilove, 1862, to *Black Prince*. **Cr.**—Hamilton Dunlop, 1869, to *Beacon;* Francis Durrant, 1869, to *Eagle*. **St. Cr.**—Richard T. N. Pearce, 1870, to *Jumna*. **L.**—Robert W. Craigie, 1872, to *Pallas* (additional); Richard F. Hoskin, 18 , to *Excellent;* Charles W. Dickenson, 1872, to *Royal Alfred;* Charles J. Doxat, 1864, Westropp T. Morgan, 1866, and Douglas M. Forsyth,

1872, to *Jumna;* William N. Madan, 1872 (additional), and George L. W. Adair, 1872 (additional), to *Excellent;* William L. Martin, 1860, and Charles E. W. H. Hutton, 1872, to *Resistance;* Orford Churchill, 1865, to *Ariel* (in command); Fritz H. E. Crowe, 1872, to *Minotaur* (additional, for temporary service); William F. S. Mann, 1867, Cecil B. Palmer, 1869, and Edmund B. Wallace, 1872, to *Amethyst;* Claud Hardinge, 1869, to *Amethyst;* Francis Powell, 1872, to *Beacon;* Edgar R. Mathias, 1865, Edward F. P. Smith, 1867, George Osborne, 1867, Harry N. Lowe, 1872, and Cecil H. Wright, 1873, to *Resistance;* John M. M'Quhae, 1872, to *Valiant;* William N. Madan, 1872, to *Vanguard* (additional); Robert L. Groome, 1872, to *Audacious* (additional). **N. L.**—Henry W. Campion, 1871, to *Blanche.* **S. L.**—Walter S. King, to *Ariel;* Alexander E. Stewart, to *Zephyr;* William P. Shakespear, to *Impregnable* (additional for *Squirrel*); General M. Richardson, to *Black Prince* (lent); Harry S. F. Niblett, to *Hector* (lent); Alexander W. C. Batten, to *Boscawen* (additional, for *Seaflower*); George H. Bruce, Hugh R. Evans, and Neville Park, to *Amethyst;* Thomas Holmes, to *Beacon;* Henry C. B. Hulbert, Frederic G. C. Langden, and George S. Gunn, to *Resistance;* Robert L. Mundy, to *Boscawen* (additional, for *Seaflower*); Arthur W. E. Prothero, Edwin J. Gallwey, and George E. Coke, to *Victoria and Albert.* **M.**—Powlett H. Hungerford, to *Sultan;* Frederic S. Inglefield, Augustus L. Knapton, George F. S. Knowling, Charles G. May, James M. Edwards, John R. Boscawen, and Herbert W. Savory, to *Amethyst;* Francis G. Kirby, to *Sultan;* Arthur M. Farquhar, 1869, and Scott W. A. H. Gray, 1871, to *Resistance;* Arthur H. D. Ravenhill, to *Amethyst.* **N. M.**—Francis Wheeler, to *Amethyst.* **C. E.**—Thomas E. Miller, 1867, to *Asia* (additional, for torpedo service); William Castle, 1873, to *Woodlark;* Joseph Rollinson, 1864, to *Hercules;* Herbert Woolley, 1864, to *Malabar.* **E.**—Joseph Hopwood, 1865, Francis T. Russell, 1867, Robert Hall, 1868, and George G. Smith, 1868, to *Jumna;* Robert Winfield, 1867, to *Agincourt;* William Landells, 1866, and Henry C. Stansmore, 1871, to *Euphrates;* Lawrence Steele, 1866, to *Pembroke* (additional, for *Philomel*); George Boyd, 1867, to *Terror* (additional, for *Scorpion*); William Herd, 1865, and Joseph Sharpe, 1868, to *Amethyst;* Thomas Cross, 1866, to *Cracker;* Robert Dixon, 1864, and Philip Blanch, 1866, to *Ariel;* William G. Beck, 1862, to *Cambridge* (additional, for *Plucky*); William Todner, 1863, to *Cambridge* (additional, for *Waterwitch*); Thomas Bell, 1863, to *Indus* (additional for *Princess Alice*); George T. Crook, 1863, to *Duncan* (additional, for *Wildfire*); Valentine Horne, 1865, to *Vanguard;* John Phillips, 1866, and John E. Callaghan, 1872, to *Beacon;* William H. Nicholson, 1865, William C. Archbold, 1867, William J. Sullock, 1868, and George Alexander, 1870, to *Resistance.* **2nd Class A. E.**—John T. Corner, 1871, to

Jumna; Richard G. Wilbey, 1872, to *Euphrates;* William W. Wootton (acting), 1872, to *Beacon;* James J. Walker (acting), 1872, to *Ariel.* **St. Sn.**—Alexander Fisher, 1872, to *Jumna;* John T. U. Bremner, M.D., 1865, to *Duncan* (additional, for Marines at Deal); Samuel S. D. Wells, 1865, to Haulbowline Hospital; James N. Dick, 1868, to *Lord Warden.* **2nd Class St. Sn.**—George F. A. Drew, 1855, to *St. Vincent;* Maxwell Rodgers, M.D., 1868, to *Egmont,* for service at the Falkland Islands; James Thomson, 1864, to *Amethyst;* William S. Fisher, M.B., B.A., 1870 to *Rattlesnake.* **Sn.**—Thomas Sparrow, M.D., to *Hercules;* Thomas Harvey, 1871, to *Argus;* John W. Davis, M.D., 1872, to *Sultan;* Matthew F. Ryan, 1868, to *Jumna;* Henry T. Cox, 1872, to *Amethyst;* Hayman Thornhill, M.B., 1872, to *Duncan;* Henry C. Woods, M.D., 1863, to *Enchantress* (for temporary service); George H. Madeley, 1867, to *Duncan;* Septimus Evans, 1867, to *Royal Adelaide;* John Mackie, 1872, to *Ariel;* William A. Connor, M.D., 1867, to *Cambridge;* Henry Beaumont, 1870, to *Beacon;* Thomas A. O'Donnell, M.D., 1872, to *Rattlesnake* (additional, for disposal). **P.**—Charles J. Card, 1861, to *Resistance.* **A. P.**—John W. Seccombe, 1865, to *Flora* (in charge); George V. Rashleigh, 1870, to *Jumna;* Russell Osborn, 1867, to *Excellent;* Horatio Howell, 1869, to *Flora* (additional, for Ascension Island); Thomas F. Harris, 1868, to *Serapis* (additional); Andrew J. Ramsay, 1870, to *St. Vincent;* Alfred G. Hill, 1867, to *Boscawen;* William H. Whyham, 1869, to *Flora* (additional, for Ascension Island); Henry G. Herbert, 1866, to *Resistance;* Arthur S. C. Clarke, 1867, to *Flora* (additional, for Ascension Island); Henry W. Hunt, 1867, to *Indus;* Henry H. Rickard, 1869, to *Resistance;* William J. Nash, 1868, to *Royal Adelaide;* James Lyon, 1869, to *Excellent;* Thomas D. Muir, 1869, to *Duncan.*

RETIREMENTS.—**C.**—Edward Lacy, 1862. **Cr.**—John W. James, 1864. **L.**—Henry Baring, 1871; Francis G. Shaw, 1859; Julius A. Baker, 1868. **S. L.**—Leonard C. Strachey, 1870. **Cn.**—Rev. Henry M. Jackson, 1858. **P.**—Theodore W. S. Neame, 1863, as Paymaster-in-Chief; George B. Westcott, 1872. **A. P.**—Charles G. Ancell, 1867; Mozart Vinning, 1867; William H. Whyham, 1869; Henry G. Herbert, 1865; James W. G. Bascombe, 1869.

DEATHS:—**Ad.**—Edward P. Halsted, 1867, *r.* **C.**—Francis Peel, 1872, *r.;* Lazarus Roberts, 1860, *r.;* Richard Joachim, 1860, *r.;* Henry C. Majendie, 1865, *r.;* **Cr.**—George J. C. Purcell, 1869; William P. Barrow, 1872; John M. D. Elphinstone, 1868. **L.**—William Skipwith, 1869. **Cn.**—Rev. Edward Brice, M.A., 1807, *r.*

SHIPPING AND MERCANTILE GAZETTE CORRESPONDENCE.
(Reprinted by special arrangement with Sir WILLIAM MITCHELL.)

DAMAGE IN HARBOUR.—I chartered my vessel, the *Climax*, of Runcorn, at Liverpool, to take a cargo of patent manure to be discharged at the College near Llanedan, in Menai Straits, which is a place where vessels usually discharge cargoes, and was requested by the officer at this place to go to Caernarvon to pay the harbour dues before discharging, which amounted to 18s. 7d., which amount has been paid. At the spot where I discharged there were a number of stones, one of which was about a foot high, which has gone through the bottom of my vessel, consequently the water came in and damaged 1 cwt. of bread, cost 26s., and also the cargo. What are those harbour dues paid for unless to keep those places in a proper and fit condition for vessels to lay? Are not the harbour authorities supposed to clear the stones away for the safety of vessels? If so, cannot I recover from the authorities the damage done to my vessel and cargo?—If the vessel was chartered to discharge aground she should have been berthed in a place she could lie safely, at low water, without damage. If the harbour authorities allowed large stones to project out of the bed of the channel where the vessel had to be berthed, and were aware of the same, and took no steps to warn shipmasters of this danger, or to remove them, they would be held liable to pay for the damages incurred.

EXPENSES OF SHIPWRECKED CREW.—An English ship having been lost off Cape Horn, part of her crew were taken by a German vessel and landed at Tomé (Chili). The German captain sent a bill of 1s. 6d. per man per day for the maintenance of the crew while on board the German vessel; also for the detention of the vessel at Tomé, and his hotel bill. Who is supposed to pay?—The agreement between the shipowner and the crew terminated on the wreck of the ship, and, therefore, the liability of the shipowner ceased from that time for any expenses incurred by the crew. The German shipmaster has a claim for the board of the crew and expenses incurred on their behalf; and those to whom the food was supplied are alone responsible for payment, if they have the means of doing so. We think, however, that the master of the German vessel should forego his claim on the shipwrecked crew, and apply to the Board of Trade, under Sec. 459 of the Merchant Shipping Act, 1854, and Sec. 59 of the 25th and 26th Vic., cap. 63, for salvage remuneration for saving life.

GUARANTEED CLASSIFICATION.—In 1867 I purchased a ship with the following clause in the agreement:—"Guarantees that the vessel shall stand A 1 red in Lloyds till end of 1868." The vessel, in August of 1868, was in New Orleans, and, having leaked at the bow, was cut away

from inside. When she returned here Lloyds surveyor went on board and condemned the ship in the month of September. The vessel was bought after coming out of dry dock, where seller said she had been thoroughly overhauled, and the certificate was obtained for the A 1 red class up to end of 1868. The vessel cost £700 odd to get her continued in the A 1 red class, as well as occupying some three months for repairs. Has the present owner (being the original purchaser) the right of action to recover cost for continuing the vessel in the guaranteed class of selling condition? Has the purchaser (the present owner) the right of action against the seller for loss of the time of the ship—say demurrage?—The ship having been placed in a dry dock, thoroughly overhauled and repaired, and the classification contracted for obtained, the conditions of the sale and purchase were fulfilled. The guarantee would imply the repairs for classification. The surveyor's certificate would show that the ship was delivered in a fit state to stand A 1 red in Lloyds till the end of 1868.

MASTER'S WAGES.—On the 20th March, 1872, a ship sailed to Hong Kong, with a cargo of coals, and was spoken on the 23rd, and has not since been heard of. About the end of September following, the owners intimated to the wife of the master that, having had a telegram from Hong Kong that day, and no word of the ship there, and the ship having been out over six months without being spoken, they declined to pay any more advances. As all hope has now gone for ever, is the widow entitled to something further on account of wages? I understand that his wages were to be £15 per month. Her advance was only £6, which she received for five months. Her husband said that his effects were insured in or through the owners' office. She holds no documents, and the owners have never admitted it. Is there any possibility of finding out if his effects have been insured, and what amount of wages you think she is entitled to?—The wages are due up to the time of the loss of the ship. It is impossible, however, to determine when the master discontinued his services, and the question must be left to the decision of the County Court having Admiralty jurisdiction, if the claim is above £50, or to the magistrates, if under that amount. The insurance companies post a ship when "out of time," and this is a criterion to go by. There is no knowing whether the ship foundered shortly after the 23rd of March, 1872, when last spoken, or whether she went down close to her port of destination. The fairest way is to claim the balance of wages for the average voyage from England to Hong Kong—or say four months for a sailing ship. This would give a claim on the owners for £30 in the case mentioned. As to obtaining information about the insurance of the master's effects, that could only be done by an action in a court of law.

ORDERS AT PORT OF CALL.—A sailing vessel when at Swansea, bound to Charente with a cargo of coals, was chartered to proceed to La Rochelle or Santander, as ordered at Charente, and there load a full and complete cargo of wheat. The vessel, on her outward voyage to Charente, met with an accident which necessitated heavy repairs. During the time the repairs were going on, the wheat charterers were communicated with, and endeavours were made to get them to load the vessel at Charente, the owner making a reduction in freight. This they refused to do, and gave orders for the vessel to proceed to La Rochelle. The captain accordingly took only a small quantity of ballast, and cleared his vessel for La Rochelle, and proceeded to what are called the "Limites" of the port, intending to drop down the river on the following morning's tide. In the meantime the charterer's agent had received counter orders, which he communicated to the captain, for the vessel to proceed to Santander. The captain refused to acknowledge the charterer's right to change the orders, the vessel having cleared and left the port for La Rochelle. But, on the charterers' agent insisting, and to avoid litigation, the captain, after some hesitation, agreed to proceed to Santander, on consideration of charterers paying the extra expense for ballasting.—It has been decided by actions in British courts of law that where the option is given by charter-party to order a ship to one port, and she has sailed to the port indicated for loading, any subsequent change in the final order, by which increased expense on the part of the shipowner is incurred, falls on the charterer.

SHORT DELIVERY.—I loaded a cargo of potatoes in Dublin, for Bangor and Caernarvon, all in bags, for three different parties—viz., 13 tons delivered at Bangor, which was tallied in and out; remainder was taken to Caernarvon, and was not tallied in, but tallied out. I delivered all I took on board to two separate parties, and one says he received seven bags short, and the other 32 bags short. I made a declaration to the effect that I delivered all I took in, and they now refuse to pay me freight for same. I did not get a bill of lading for the goods; consequently I signed no document for quantity or weight. The parties want me to pay them the value of the deficiency. Must I be answerable for such or not, and can I not claim my freight for quantity delivered?—A shipmaster himself, or his mate, should keep tally of the cargo where it can be done, as in the shipment of bags of potatoes; and, not having done so, it will be difficult to establish a complete answer to the demand. If the cargo has been parted with, and the lien for freight gone, our correspondent will have to take legal proceedings, and then the court will have to decide as to the alleged short delivery on the evidence adduced.

My vessel was engaged by word of mouth to go from this port to Cardiff for a cargo of coals. I took in the cargo, and signed for eighty-

eight tons, feeling quite satisfied my vessel had got the weight in, according to loading marks, and which we can tell in small vessels. I have now delivered two tons short of what I signed for, and not having seen it weighed into the ship, can the merchant make me pay first cost of coals; and, also, can he make me pay for wheeling the cargo into his store? What is my best step to take?—If the coal waggons were exposed to the rain, the coal would weigh heavier on shipment than on discharge, for they would drain in the hold, and partly dry during the voyage. This would not, perhaps, account for two out of eighty-eight tons, the difference in weight between input and output. The cargo, or a portion of it, should have been held for bill of lading freight, if proof can be given that all the coal shipped was duly delivered. The hirer of the ship should be sued for the sums deducted. The shipowner cannot be made liable for the expense of wheeling the cargo, nor has he anything to do with it.

I have lately had many heavy deductions to make for short weight on coals shipped for France and the English Channel ports. The colliery refused to admit my claims, saying that the coals were weighed within 100 yards of the loading berth, and that the captain or his mate could check the weighing. I thereupon asked the colliery to point this out to the next captain, and to refuse to allow him to put "weight unknown" on his bill of lading. They have done so, and the captain has refused to sign, and has sailed away without bills of lading. What redress is open to me, as not having signed a bill of lading may invalidate the insurance of the cargo? Is it not hard that the party having no control over the weighing of the coals should be held liable for the short weight? If the colliery place at disposal of captains the means of checking the weight they can do no more.—A shipmaster may be shown a truck on a weigh-bridge and be told that the total weight is so much, and the tare of the waggon so much, leaving the nett weight of coal to be so many tons and fractions; but he has no means of verifying the correctness of the machine or the tare of the truck. A master is not compelled to sign for weight unless he can satisfactorily check the weighing and establish the facts. It is hard, as our correspondent states, to be held liable as the exporter, and it would be still harder to make the carrier liable for frauds on weighing.

Protest.—When signing bills of lading for my cargo, I wrote the words "weight unknown to master," as I believed that quantity was not on board. However, I arrived at port of discharge, and discharged cargo, which turned out 7 tons 5 cwt. short of bill of lading quantity. The holder of my bill of lading wanted me to make a declaration at my own expense, which I refused to do, as I thought I could not be com-

pelled to pay when I did not sign for weight. Am I obliged to make a declaration, at my own expense, to recover my freight, when consignee would not pay until I signed one? It only costs 2s. 6d., but this amount, I think, should be paid at all times by shippers or consignees.—Whoever wants a protest should pay for it. In the instance mentioned the protest was for the benefit of the consignee, and should be paid for by him.

TOWAGE AND SALVAGE.—I am one of the crew of the screw steamer *Redesdale*, of North Shields. We took in tow the screw steamer *Swan*, of Newcastle, with broken shaft, and towed her to Malta, her port of destination, on June 17 last year. Are we entitled to any recompense from the owners for such services?—Towage is not salvage, and, therefore, the crew of the steamer which towed the other are not entitled to any share in the sum earned. Had a gale sprung up, and the disabled ship been placed in danger, the towage would have been converted into salvage, and the crew could have claimed a share in any salvage award.

TIGHT, STAUNCH, AND STRONG.—We chartered a vessel some time since on the form enclosed for your inspection. You will observe it is worded, "That the said ship, being tight, staunch, and strong, and every way fitted for the voyage, shall, with all convenient speed, sail and proceed to Quebec direct in ballast." The vessel was on the patent slip at the time of the charter, having necessary repairs effected, of which the charterers were fully aware. These repairs were completed on the 23rd, and vessel was ballasted and sailed 27th. Two questions have arisen resulting in a lawsuit in this case, and we wish to know the legal position, or definition of the case as understood in maritime circles. 1. There being two forms of charter-party—one, "the vessel being tight, staunch, and strong," &c., and the other, "the vessel being now tight, staunch, strong," &c.—we, of course, adopted the first-named form, the vessel being at the time on the slip. In each case, does not the meaning of word "being" signify that, when the vessel shall be tight, staunch, and strong, she shall with all convenient speed proceed, &c.? 2. "In ballast." Do these words bind the owners to purchase ballast, and prohibit them from carrying any article, such as iron, ore, moulding sand, limestone, &c., should such be offered to ballast the ship, and provided freight free?—1st. The words "now" and "being" make no difference in the actual warrantry, as both imply that the ship shall be tight, staunch, and strong, at the time of sailing. In one case the ship is implied to be in an efficient state when the charter-party is entered into; and the other, that she shall be so when she commences her voyage. 2nd. The ship would not be prohibited from carrying any kind of ballast. If the charterer were to provide the ballast, he would be entitled to any benefit arising therefrom, but not otherwise.

GENERAL.

LOCKING UP SAFETY-VALVES.—Section 301 of the Merchant Shipping Act, 1854, requires that a safety-valve shall be provided on each boiler of a steamship, and shall be so constructed as to be out of the control of the engineer when the steam is up. It has been suggested that it might be safer to leave the valve wholly free for everyone to see at all times, the Board of Trade surveyor merely fixing the working pressure for the boiler, and the present penalties for increasing or tampering with the weight fixed on the valves, as stated in section 302 of the Act, being retained. Looking at the difficulty of placing valves out of control, the danger of placing valves out of sight, and the facility with which the weights can at any time be altered when the ship is in port, it is a question deserving of consideration whether advantage should not be taken of the Merchant Shipping Bill now before Parliament for inserting a clause to carry out this suggestion.

ORIGINAL PROBLEMS.

ANSWER TO PROBLEM IN JULY NUMBER.

1. 4′·5 per hour.
2. 1′·5 do.
3. Distance 8′.

SOLUTION.

1. $\frac{6}{1\cdot\frac{2}{6}\frac{0}{0}}$ or $\frac{6}{1\frac{1}{3}} = \frac{18}{4} = 4'\cdot5$;

or

$\frac{12}{2\frac{2}{3}} = \frac{36}{8} = 4'\cdot5.$

2. Let x = current per hour,
   then $6 + 1\frac{1}{3}x$ = distance,
   and $12 - 2\frac{2}{3}x$ = distance
   $\therefore 6 + 1\frac{1}{3}x = 12 - 2\frac{2}{3}x$
   $4x = 6$
   $x = 1'\cdot5.$

3. Substituting value of x
   $6 + 1\cdot5 \times 1\frac{1}{3} = 8'$
   or
   $12 - 1\cdot5 \times 2\frac{2}{3} = 8'.$

NAUCLERUS.

THE

NAUTICAL MAGAZINE.

NEW SERIES.

SEPTEMBER, 1873.

MERCHANT SHIPPING LEGISLATION, 1873.

WHATEVER may be said about the barrenness of the past session, the nautical community, at least, have to congratulate themselves on the passing of another amendment to the Merchant Shipping Act. This most important piece of legislation has been added to our Statute Book through the persistent efforts of the Right Hon. Chichester Fortescue, and we venture to express our belief that the Mercantile Marine of this country will be greatly benefited by the new Act.

We rejoice to see that Her Majesty's Government have rejected the proposals put forward by the humanitarians and doctrinaires who have supplied the froth and wind for the recent sensational agitation, and that the management and supervision of Great Britain's vast mercantile fleet are not to be handed over to any Government Department, or any Registry Society. Every one admits, as has been repeatedly stated and proved in the *Nautical Magazine*, that ships are sent to sea which ought not to be sent, and that lives are lost which ought not to be lost. But because these things are so, it is not right that susceptible and impulsive persons, who notably know nothing about ships and seamen, should propose all kinds of absurd measures, and carry them through on a wave of popular enthusiasm. Undoubtedly, it is not right, and clear-headed people do not fail to see the absurdity. The proposals that have been lately made are, that the condition of every British ship should be ascertained once a year in port, that a load line should be marked on every

ship, that the stowage of the cargo should be superintended, and that before every voyage is commenced a Government officer, or an officer attached to one of the Registries, should record and approve of the ship's draught and condition. In short, the business of a shipowner was to be taken out of his hands, and managed for him by an army of inspectors and surveyors, all of whom were to bleed him by delays and fees until he became like a helpless web-bound fly, in the clutches of a terrible spider. A wiser and longer-sighted portion of the community, who are familiar in every detail with trade, as carried on in British ships, have with reason insisted that to remove the chief, or any of the responsibilities attaching to the owning of ships, from the shipowner and his servants, and to place them on a Government officer, or the officer of a private association of surveyors, is not likely to result in public good, but must end in positive harm; and they have all along urged that, in order to prevent 100 unseaworthy vessels from going to sea, it would be the height of absurdity to inspect 26,000 other ships. The new Act commends itself to people who think in this way, because there is nothing in it to remove responsibility, nothing subversive of reason or principle, and everything to fix responsibility upon those who ought in justice to bear it.

Mr. Plimsoll's Bill from the first was impossible, for its proposals were contrary to the spirit of recent legislation on the subject of Merchant Shipping; but Mr. Fortescue's Act, following, as it does, in the wake of the right honourable gentleman's previous legislation, coincides with and supports existing law; further, it will strengthen the action of the common law of the country; and, lastly, it is a measure which could be passed without slight or insult to the Royal Commission, now sitting under the able presidency of the Duke of Somerset.

The great principle on which the Act proceeds is, that the plain duty of a shipowner is to make and keep his ship seaworthy in hull, equipments, and machinery, and that this being his duty, he has no cause to complain if, on its being discovered that he has sent an unseaworthy ship to sea, in defiance of the law, and of all proper feelings, he is made to bear the penalty of his negligence or parsimony.

We do not now propose to criticise the Act in detail; we can only allude with satisfaction to the fact that the views expressed in the articles that have appeared in our pages on "British Ships and British Seamen," "Wrecks and Misconduct at Sea," "Personal Responsibility," and "Common Sense," have proved to be consonant with the views of Her Majesty's Government, and have the force of legislative expression in this new Act.

For the information of our readers we reproduce, *in extenso*, the text of Mr. Fortescue's Act of 1878.

"MERCHANT SHIPPING ACTS AMENDMENT ACT, INTITULED 'AN ACT TO AMEND THE MERCHANT SHIPPING ACTS.'

"Be it enacted by the Queen's most Excellent Majesty, by and with the advice and consent of the Lords Spiritual and Temporal, and Commons, in this present Parliament assembled, and by the authority of the same, as follows:—

"*Preliminary.*

"1. This Act may be cited as the Merchant Shipping Act, 1873.

"2. This Act shall be construed as one with the Merchant Shipping Act, 1854, and the Acts amending the same, and the said Acts and this Act may be cited collectively as the Merchant Shipping Acts, 1854 to 1873.

"*Registry (Part II. of Merchant Shipping Act, 1854).*

"3. Every British ship registered after the passing of this Act shall before registry, and every British ship registered before the passing of this Act shall, on or before the first day of January, 1874, be permanently and conspicuously marked to the satisfaction of the Board of Trade as follows:—

"Her name shall be marked on each of her bows, and her name and the name of her port of registry shall be marked on her stern, on a dark ground in white or yellow letters, or on a light ground in black letters, such letters to be of a length not less than four inches and of proportionate breadth:

"Her official number and the number denoting her registered tonnage shall be cut in on her main beam:

"A scale of feet denoting her draught of water shall be marked on each side of her stem and of her stern post in Roman capital letters or in figures, not less than six inches in length, the lower line of such letters or figures to coincide with the draught line denoted thereby. Such letters or figures shall be marked by being cut in and painted white or yellow on a dark ground, or in such other way as the Board of Trade may from time to time approve.

"The Board of Trade may however exempt any class of ships from the requirements of this section or any of them.

"If the scale of feet showing the ship's draught of water is in any respect inaccurate, so as to be likely to mislead, the Owner of the ship shall incur a penalty not exceeding £100.

"The marks required by this section shall be permanently continued, and no alteration shall be made therein, except in the event of any of the particulars thereby denoted being altered in the manner provided by the Merchant Shipping Acts 1854 to 1873.

"Any Owner or Master of a British ship who neglects to cause his ship to be marked as aforesaid, or to keep her so marked, and any person who conceals, removes, alters, defaces, or obliterates, or suffers any person under his control to conceal, remove, alter, deface, or obliterate any of the said marks, except in the event aforesaid, or except for the purpose of escaping capture by an enemy, shall for each offence incur a penalty not exceeding £100, and any Officer of Customs on receipt of a certificate from a Surveyor or Inspector of the Board of Trade that a ship is insufficiently or inaccurately marked may detain the same until the insufficiency or inaccuracy has been remedied.

"Provided that no fishing vessel duly registered, lettered and numbered in pursuance of the Sea Fisheries Act, 1868, shall be required to have her name and port of registry marked under this section.

"Provided also, that if any registered British ship is not within a port of the United Kingdom at any time before the first day of January, 1874, she shall be marked as by this section required within one month after her next return to a British port of registry subsequent to that date.

"4. The record of the draught of water of any sea-going ship required under section five of the Merchant Shipping Act, 1871, shall, in addition to the particulars thereby required, specify the extent of her clear side in feet and inches.

"The term 'clear side' means the height from the water to the upper side of the plank of the deck from which the depth of hold as stated in the register is measured, and the measurement of the clear side is to be taken at the lowest part of the side.

"Every Master of a sea-going ship shall, upon the request of any person appointed to record the ship's draught of water, permit such person to enter the ship and to make such inspections and take such measurements as may be requisite for the purpose of such record, and any Master who fails so to do, or impedes or suffers any one under his control to impede any person so appointed in the execution of his duty shall for each offence incur a penalty not exceeding £5.

"5. Where a foreign ship, not having at any previous time been registered as a British ship, becomes a British ship, no person shall apply to register, and no Registrar shall knowingly register such ship, except by the name which she bore as a foreign ship immediately before becoming a British ship, unless with the permission of the Board of Trade granted in manner directed by Section 6 of the Merchant Shipping Act, 1871.

"Any person who acts or suffers any person under his control to act in contravention of this section, shall, for each offence, incur a penalty not exceeding £100.

"6. Where a ship has ceased to be registered as a British ship by reason of having been wrecked or abandoned, or for any reason other than capture by the enemy, or transfer to a person not qualified to own a British ship, such ship shall not be re-registered until she has, at the expense of the applicant for registration, been surveyed by one of the Surveyors appointed by the Board of Trade and certified by him to be seaworthy.

"*Masters and Seamen (Part III. of Merchant Shipping Act*, 1854*).*

"7. Any agreement with a Seaman made under Section 149 of the Merchant Shipping Act, 1854, may, instead of stating the nature and duration of the intended voyage or engagement, as by that section required, state the maximum period of the voyage or engagement, and the places or parts of the world (if any) to which the voyage or engagement is not to extend.

"8. The Owner or Master of any British vessel engaged in fishing off the coast of the United Kindom may enter into an agreement with any person employed on such vessel that such person shall be remunerated wholly by a share in the profit of the fishing adventure.

"Every such agreement shall be in writing or in print, or partly in writing and partly in print, and shall be signed by the contracting parties in the presence of a Superintendent or Deputy-Superintendent of a Mercantile Marine Office.

"The Superintendent or Deputy-Superintendent shall, before such agreement is signed, read and (if necessary) explain the same to the contracting parties, and shall attest the signature of the agreement, and certify that it has been read to and agreed to by the contracting parties.

"Any such agreement, if made in the manner by this section required, shall be valid and binding on all the contracting parties, notwithstanding anything contained in Section 182 of the Merchant Shipping Act, 1854.

"9. If a Seaman or Apprentice belonging to any ship is detained on a charge of desertion or any kindred offence, and if upon a survey of the ship being made under Section 7 of the Merchant Shipping Act, 1871, it is proved that she is not in a fit condition to proceed to sea, or that her accommodation is insufficient, the Owner or Master of the ship shall be liable to pay to such Seaman or Apprentice such compensation for his detention as the Court, having cognizance of the proceedings, may award.

"10. In any case where the business of a Mercantile Marine Office is conducted otherwise than under a Local Marine Board, the Board of Trade may, if they think fit, instead of conducting such business at a Custom-house or otherwise, establish a Mercantile Marine Office, and for that pur-

pose procure the requisite buildings and property, and from time to time appoint and remove all the requisite superintendents, deputies, clerks, and servants. They may also in the like case make all such provisions and exercise all such powers with respect to the holding of examinations for the purpose of granting certificates of competency as Masters, Mates, or Engineers, to persons desirous of obtaining the same, as might have been made or exercised by a Local Marine Board.

"11. Whenever it has been made to appear to Her Majesty that the Government of any foreign State is desirous that any of the provisions of the Merchant Shipping Acts, 1854 to 1878, relating to the engagement and discharge of Seamen, shall apply to the ships of such State, Her Majesty may by Order in Council declare that such of the said provisions as are in such Order specified, shall, subject to the limitations, if any, contained in the Order, apply, and thereupon, so long as the Order remains in force, such provisions shall apply, subject to the said limitations, to the ships of such State, and to the Owners, Masters, Officers, and Crews of such ships, when not within the jurisdiction of such State, in the same manner in all respects as if such ships were British ships.

"It shall be lawful for Her Majesty from time to time by Order in Council to add to, alter, or repeal any Order made under this section.

"*Safety and Prevention of Accidents (Part IV. of Merchant Shipping Act*, 1854*).*

"12. Where the Board of Trade have received a complaint, or have reason to believe that any British ship is by reason of the defective condition of her hull, equipments, or machinery, or by reason of overloading, or improper loading, unfit to proceed to sea, without serious danger to human life, they may, if they think fit, appoint some competent person or persons to survey such ship, and the equipments, machinery, and cargo thereof, and to report thereon to the Board.

"Any person so appointed may, for the purposes of such survey, require the unloading or removal of any cargo, ballast, or tackle, and shall have all the powers of an inspector appointed under the Merchant Shipping Act, 1854.

"Any person who, having notice of the intention to hold such survey, wilfully does, or causes to be done, any act by which the person appointed to make such survey is prevented from, or obstructed in, ascertaining the condition of the ship, her equipments, machinery, and cargo, shall be liable to a penalty not exceeding £50.

"The Board of Trade may, if they think fit, order that any ship be detained for the purpose of being surveyed under this section, and thereupon any Officer of Customs may detain such ship until her release be

ordered, either by the Board of Trade, or by any Court to which an appeal is given under this Act.

"Upon the receipt of the report of the person making any such survey, the Board may, if in their opinion the ship cannot proceed to sea without serious danger to human life, make such further order as they may think requisite as to the detention of the ship, or as to her release, either absolutely, or upon the performance of such conditions with respect to the execution of repairs or alterations, or the unloading or reloading of cargo, as the Board may impose. They may also from time to time vary or add to such order.

"A copy of any such order, and of the report upon which it was founded, and also of any variation of, or addition to, such order, shall be delivered as soon as possible to the Owner or Master of the ship to which it relates.

"When a ship has been detained under this section she shall not be released by reason of her British Register having been closed.

"13. If upon the survey of a ship under this Act, she is reported to have been at the time of the survey, having regard to the nature of the service for which she was then intended, unfit to proceed to sea, without serious danger to human life, the expenses incurred by the Board of Trade in respect of the survey, shall be paid by the Owner of the ship to the Board of Trade, and shall, without prejudice to any other remedy, be recoverable by them in the same manner as salvage is recoverable.

"If, upon such survey, the ship is not reported to have been unfit to proceed to sea, having regard to the nature of the service for which she was intended, the Board of Trade shall be liable to pay compensation to any person for any loss or damage which he may have sustained by reason of the detention of the ship for the purpose of survey, or otherwise, in respect of such survey.

"Where a complaint has been made to the Board of Trade that a ship is not fit to proceed to sea, they may, if they think fit, before ordering a survey of the ship, require the complainant to give or provide such security as they may think sufficient for the payment of the costs and expenses which they may incur in respect of the survey of the ship, and of the compensation which they may be rendered liable to pay for loss or damage caused by her detention for the purpose of such survey, or otherwise in respect of such survey.

"Where a ship has been surveyed under this Act, in consequence of a complaint made to the Board of Trade, if upon such survey being made, it appear that such complaint was made without reasonable cause, the expenses incurred by the Board in respect of the survey of the ship, and the amount, if any, which the Board may have been rendered liable to

pose procure the requisite buildings and property, and from time to time appoint and remove all the requisite superintendents, deputies, clerks, and servants. They may also in the like case make all such provisions and exercise all such powers with respect to the holding of examinations for the purpose of granting certificates of competency as Masters, Mates, or Engineers, to persons desirous of obtaining the same, as might have been made or exercised by a Local Marine Board.

"11. Whenever it has been made to appear to Her Majesty that the Government of any foreign State is desirous that any of the provisions of the Merchant Shipping Acts, 1854 to 1878, relating to the engagement and discharge of Seamen, shall apply to the ships of such State, Her Majesty may by Order in Council declare that such of the said provisions as are in such Order specified, shall, subject to the limitations, if any, contained in the Order, apply, and thereupon, so long as the Order remains in force, such provisions shall apply, subject to the said limitations, to the ships of such State, and to the Owners, Masters, Officers, and Crews of such ships, when not within the jurisdiction of such State, in the same manner in all respects as if such ships were British ships.

"It shall be lawful for Her Majesty from time to time by Order in Council to add to, alter, or repeal any Order made under this section.

"*Safety and Prevention of Accidents (Part IV. of Merchant Shipping Act*, 1854*).*

"12. Where the Board of Trade have received a complaint, or have reason to believe that any British ship is by reason of the defective condition of her hull, equipments, or machinery, or by reason of overloading, or improper loading, unfit to proceed to sea, without serious danger to human life, they may, if they think fit, appoint some competent person or persons to survey such ship, and the equipments, machinery, and cargo thereof, and to report thereon to the Board.

"Any person so appointed may, for the purposes of such survey, require the unloading or removal of any cargo, ballast, or tackle, and shall have all the powers of an inspector appointed under the Merchant Shipping Act, 1854.

"Any person who, having notice of the intention to hold such survey, wilfully does, or causes to be done, any act by which the person appointed to make such survey is prevented from, or obstructed in, ascertaining the condition of the ship, her equipments, machinery, and cargo, shall be liable to a penalty not exceeding £50.

"The Board of Trade may, if they think fit, order that any ship be detained for the purpose of being surveyed under this section, and thereupon any Officer of Customs may detain such ship until her release be

ordered, either by the Board of Trade, or by any Court to which an appeal is given under this Act.

"Upon the receipt of the report of the person making any such survey, the Board may, if in their opinion the ship cannot proceed to sea without serious danger to human life, make such further order as they may think requisite as to the detention of the ship, or as to her release, either absolutely, or upon the performance of such conditions with respect to the execution of repairs or alterations, or the unloading or reloading of cargo, as the Board may impose. They may also from time to time vary or add to such order.

"A copy of any such order, and of the report upon which it was founded, and also of any variation of, or addition to, such order, shall be delivered as soon as possible to the Owner or Master of the ship to which it relates.

"When a ship has been detained under this section she shall not be released by reason of her British Register having been closed.

"13. If upon the survey of a ship under this Act, she is reported to have been at the time of the survey, having regard to the nature of the service for which she was then intended, unfit to proceed to sea, without serious danger to human life, the expenses incurred by the Board of Trade in respect of the survey, shall be paid by the Owner of the ship to the Board of Trade, and shall, without prejudice to any other remedy, be recoverable by them in the same manner as salvage is recoverable.

"If, upon such survey, the ship is not reported to have been unfit to proceed to sea, having regard to the nature of the service for which she was intended, the Board of Trade shall be liable to pay compensation to any person for any loss or damage which he may have sustained by reason of the detention of the ship for the purpose of survey, or otherwise, in respect of such survey.

"Where a complaint has been made to the Board of Trade that a ship is not fit to proceed to sea, they may, if they think fit, before ordering a survey of the ship, require the complainant to give or provide such security as they may think sufficient for the payment of the costs and expenses which they may incur in respect of the survey of the ship, and of the compensation which they may be rendered liable to pay for loss or damage caused by her detention for the purpose of such survey, or otherwise in respect of such survey.

"Where a ship has been surveyed under this Act, in consequence of a complaint made to the Board of Trade, if upon such survey being made, it appear that such complaint was made without reasonable cause, the expenses incurred by the Board in respect of the survey of the ship, and the amount, if any, which the Board may have been rendered liable to

pay in respect of any loss or damage caused by her detention, shall be recoverable by the Board from such complainant.

"All moneys payable by the Board of Trade in respect or by reason of the survey or detention of a ship, under this Act shall, subject to the right by this section provided of recovering such moneys from the complainant, be paid out of moneys to be provided by Parliament.

"14. If the Owner of any ship surveyed under this Act is dissatisfied with any order of the Board of Trade made upon such survey, he may apply to any of the following Courts having jurisdiction in the place where such ship was surveyed, that is to say:—

"In England, to any Court having Admiralty jurisdiction;

"In Ireland, to any Court having jurisdiction under the Court of Admiralty (Ireland) Act, 1867;

"In Scotland, to the Court of the Sheriff of the County.

"The Court may, upon such application, if they think fit, appoint one or more competent persons to survey the ship anew, and any Surveyor so appointed shall have all the powers of the person by whom the original survey was made. Such survey anew shall, if so required by the Board of Trade or the Shipowner, be made in the presence of any person or persons appointed by them respectively to attend at the survey.

"The Court to which such application is made may make such order as to the detention or release of the ship, as to the payment of any costs and damages which may have been occasioned by her detention, as to the payment of the expenses of the original survey, and of the survey anew, and otherwise as to the payment of any costs of and incident to the application, as to the Court may seem just.

"Where an application is made under this section to a County Court, or in Ireland to a Local Court, the matter of the application shall be deemed to be an Admiralty cause within the meaning of the County Courts Admiralty Jurisdiction Act, 1868, and the Court of Admiralty, (Ireland) Act, 1867.

"15. In the case of any ship surveyed under the fourth part of the Merchant Shipping Act, 1854, the Board of Trade may, at the request of the Owner, authorise the reduction of the number and the variation of the dimensions of the boats required for the ship by Section 292 of that Act, and also the substitution of rafts or other appliances for saving life for any such boats, so nevertheless that the boats so reduced or varied, and the rafts or appliances so substituted, be sufficient for the persons carried on board the ship.

"Section 293 of the said Act shall extend to any such rafts or appliances in the same manner as if they were boats.

"16. In every case of collision between two vessels it shall be the duty of the Master or person in charge of each vessel, if and so far

as he can do so without danger to his own vessel, Crew, and passengers (if any), to stay by the other vessel until he has ascertained that she has no need of further assistance, and to render to the other vessel, her Master, Crew, and passengers (if any), such assistance as may be practicable and as may be necessary in order to save them from any danger caused by the collision; and also to give to the Master or person in charge of the other vessel the name of his own vessel, and of her port of registry, or of the port or place to which she belongs, and also the names of the ports and places from which and to which she is bound.

"If he fails so to do, and no reasonable cause for such failure is shown, the collision shall, in the absence of proof to the contrary, be deemed to have been caused by his wrongful act, neglect, or default.

"Every Master or person in charge of a British vessel who fails, without reasonable cause, to render such assistance, or give such information as aforesaid, shall be deemed guilty of a misdemeanor, and, if he is a certificated Officer, an inquiry into his conduct may be held, and his certificate may be cancelled or suspended.

"17. If in any case of collision it is proved to the Court before which the case is tried that any of the regulations for preventing collision contained in or made under the Merchant Shipping Acts, 1854 to 1873, has been infringed, the ship by which such regulation has been infringed shall be deemed to be in fault, unless it is shown to the satisfaction of the Court that the circumstances of the case made departure from the regulation necessary.

"18. The signals specified in the First Schedule to this Act shall be deemed to be signals of distress.

"Any Master of a vessel who uses or displays, or causes or permits any person under his authority to use or display, any of the said signals, except in the case of a vessel being in distress, shall be liable to pay compensation for any labour undertaken, risk incurred, or loss sustained in consequence of such signal having been supposed to be a signal of distress, and such compensation may, without prejudice to any other remedy, be recovered in the same manner in which salvage is recoverable.

"19. If a vessel requires the services of a Pilot, the signals to be used and displayed shall be those specified in the Second Schedule to this Act.

"Any Master of a vessel who uses or displays, or causes or permits any person under his authority to use or display, any of the said signals for any other purpose than that of summoning a Pilot, or uses, or causes, or permits any person under his authority to use any other signal for a Pilot, shall incur a penalty not exceeding £20.

"20. Her Majesty may, from time to time, by Order in Council repeal or alter the rules as to signals contained in the schedules to this Act, or

make new rules in addition thereto, or in substitution therefor, and any alterations in, or additions to, such rules made in manner aforesaid, shall be of the same force as the rules in the said schedules.

"21. Any Shipowner who is desirous of using for the purposes of a private code, any rockets, lights, or other similar signals, may register such signals with the Board of Trade, and the Board shall give public notice of the signals so registered in such manner as they may think requisite for preventing such signals from being mistaken for signals of distress or signals for Pilots.

"The Board may refuse to register any signals which, in their opinion, cannot easily be distinguished from signals of distress or signals for Pilots.

"When any signal has been so registered the use or display thereof by any person acting under the authority of the Shipowner in whose name it is registered shall not subject any person to any of the penalties or liabilities by this Act imposed upon persons using or displaying signals improperly.

"22. If the Managing Owner, or, in the event of there being no Managing Owner, the Ship's Husband of any British ship have reason, owing to the non-appearance of such ship, or to any other circumstance, to apprehend that such ship has been wholly lost, he shall, as soon as conveniently may be, send to the Board of Trade notice in writing of such loss and of the probable occasion thereof, stating the name of the ship and her official number (if any), and the port to which she belongs, and if he neglect to do so within a reasonable time he shall incur a penalty not exceeding £50.

"23. If any person sends, or attempts to send by, or, not being the Master or Owner of the vessel, carries, or attempts to carry in any vessel, British or foreign, any dangerous goods—that is to say, aquafortis, vitriol, naptha, benzine, gunpowder, lucifer matches, nitro-glycerine, petroleum, or any other goods of a dangerous nature—without distinctly marking their nature on the outside of the package containing the same, and giving written notice of the nature of such goods, and of the name and address of the sender or carrier thereof, to the Master or Owner of the vessel at or before the time of sending the same to be shipped or taking the same on board the vessel, he shall for every such offence incur a penalty not exceeding £100: Provided that if such person show that he was merely an agent in the shipment of any such goods as aforesaid, and was not aware and did not suspect, and had no reason to suspect that the goods shipped by him were of a dangerous nature, the penalty which he incurs shall not exceed £10.

"24. If any person knowingly sends, or attempts to send by, or carries or attempts to carry in any vessel, British or foreign, any

dangerous goods or goods of a dangerous nature, under a false description, or falsely describes the sender or carrier thereof, he shall incur a penalty not exceeding £500.

"25. The Master or Owner of any vessel, British or foreign, may refuse to take on board any package or parcel which he suspects to contain goods of a dangerous nature, and may require it to be opened to ascertain the fact.

"26. Where any dangerous goods as defined in this Act, or any goods which, in the judgment of the Master or Owner of the vessel, are of a dangerous nature, have been sent or brought aboard any vessel, British or foreign, without being marked as aforesaid, or without such notice having been given as aforesaid, the Master or Owner of the vessel may cause such goods to be thrown overboard, together with any package or receptacle in which they are contained; and neither the Master nor the Owner of the vessel shall, in respect of such throwing overboard, be subject to any liability, civil or criminal, in any Court.

"27. Where any dangerous goods have been sent or carried, or attempted to be sent or carried, on board any vessel, British or foreign, without being marked as aforesaid, or without such notice having been given as aforesaid, and where any such goods have been sent or carried, or attempted to be sent or carried, under a false description, or the sender or carrier thereof has been falsely described, it shall be lawful for any Court having Admiralty jurisdiction to declare such goods, and any package or receptacle in which they are contained, to be and they shall thereupon be forfeited, and when forfeited shall be disposed of as the Court directs.

"The Court shall have and may exercise the aforesaid powers of forfeiture and disposal notwithstanding that the owners of the goods have not committed any offence under the provisions of this Act relating to dangerous goods, and be not before the Court, and have not notice of the proceedings, and notwithstanding that there be no evidence to show to whom the goods belong; nevertheless, the Court may, in its discretion, require such notice as it may direct to be given to the Owner or Shipper of the goods before the same are forfeited.

"28. The provisions of this Act relating to the carriage of dangerous goods shall be deemed to be in addition to and not in substitution for, or in restraint of, any other enactment for the like object, so, nevertheless, that nothing in the said provisions shall be deemed to authorise that any person be sued or prosecuted twice in the same matter.

"Miscellaneous and Repeal.

"29. Where, in accordance with the Foreign Jurisdiction Acts, Her Majesty exercises jurisdiction within any Port out of Her Majesty's dominions, it shall be lawful for Her Majesty, by Order in Council, to declare such port a port of registry (in this Act referred to as a foreign port of registry), and by the same or any subsequent Order in Council to declare the description of persons who are to be the Registrars of British ships at such foreign port of registry, and to make regulations with respect to the registry of British ships thereat.

"Upon such Order coming into operation it shall have effect as if it were enacted in the Merchant Shipping Acts, 1854 to 1873, and shall, subject to any exceptions and regulations contained in the Order, apply in the same manner, as near as may be, as if the port mentioned in the Order were an ordinary port of registry.

"30. There shall be paid in respect of the several measurements, inspections, and surveys mentioned in the Third Schedule hereto such fees, not exceeding those specified in that behalf in the said schedule, as the Board of Trade may from time to time determine.

"31. In any legal proceedings under the Merchant Shipping Acts, 1854 to 1873, the Board of Trade may take proceedings in the name of any of their officers.

"32. The following sections of this Act, that is to say, Sections 16, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, shall not come into operation until the 1st day of November, 1873.

"33. Section 29 of the Merchant Shipping Act Amendment Act, 1862, and Section 4 and 10 of the Merchant Shipping Act, 1871, are hereby repealed; and on and after the 1st day of November, 1873, Sections 327 and 329 of the Merchant Shipping Act, 1854, Sections 33 and 38 of the Merchant Shipping Act Amendment Act, 1862, and Section 9 of the Merchant Shipping Act, 1871, shall be repealed; but this repeal shall not affect—

"(1.) Anything duly done before this Act comes into operation:

"(2.) Any right acquired or liability accrued before this Act comes into operation:

"(3.) Any penalty, forfeiture, or other punishment incurred or to be incurred in respect of any offence committed before this Act comes into operation; or,

"(4.) The institution of any legal proceeding or any other remedy for ascertaining, enforcing, or recovering any such liability, penalty, forfeiture, or punishment as aforesaid.

"SCHEDULE I.

"SIGNALS OF DISTRESS.

"*In the Daytime.*—The following signals, numbered 1, 2, and 3, when used or displayed together or separately, shall be deemed to be signals of distress in the daytime :—

"1. A gun fired at intervals of about a minute ;

"2. The *International Code* signal of distress indicated by N C ;

"3. The distant signal, consisting of a square flag having either above or below it a ball, or anything resembling a ball.

"*At Night.*—The following signals, numbered 1, 2, and 3, when used or displayed together or separately, shall be deemed to be signals of distress at night :—

"1. A gun fired at intervals of about a minute ;

"2. Flames on the ship (as from a burning tar barrel, oil barrel, &c.) ;

"3. Rockets or shells, of any colour or description, fired one at a time at short intervals.

"SCHEDULE II.

"SIGNALS TO BE MADE BY SHIPS WANTING A PILOT.

"*In the Daytime.*—The following signals, numbered 1 and 2, when used or displayed together or separately, shall be deemed to be signals for a Pilot in the daytime, viz. :—

"1. To be hoisted at the fore, the Jack or other national colour usually worn by Merchant ships, having round it a white border, one fifth of the breadth of the flag ; or,

"2. The *International Code* pilotage signal indicated by P T.

"*At Night.*—The following signals, numbered 1 and 2, when used or displayed together or separately, shall be deemed to be signals for a Pilot at night, viz. :—

"1. The pyrotechnic light commonly known as a blue light every fifteen minutes ; or,

"2. A bright white light, flashed or shown at short or frequent intervals just above the bulwarks, for about a minute at a time.

"SCHEDULE III.

"TABLE OF MAXIMUM FEES TO BE PAID FOR THE MEASUREMENT, SURVEY, AND INSPECTION OF MERCHANT SHIPS.

"1. *For Measurement of Tonnage.*

	£	s.	d.
"For a ship under 50 tons register tonnage ...	1	0	0
,, from 50 to 100 tons ,, ...	1	10	0
,, ,, 100 to 200 ,, ,, ...	2	0	0
,, ,, 200 to 500 ,, ,, ...	3	0	0
,, ,, 500 to 800 ,, ,, ...	4	0	0
,, ,, 800 to 1,200 ,, ,, ...	5	0	0
,, ,, 1,200 to 2,000 ,, ,, ...	6	0	0
,, ,, 2,000 to 3,000 ,, ,, ...	7	0	0
,, ,, 3,000 to 4,000 ,, ,, ...	8	0	0
,, ,, 4,000 to 5,000 ,, ,, ...	9	0	0
,, ,, 5,000 and upwards ,, ...	10	0	0

"2. *For the Inspection of the Berthing or Sleeping Accommodation of the Crew.*

	£	s.	d.
"For each visit to the ship	0	10	0

"Provided as follows:—

"1. The aggregate amount of the fees for any such inspection shall not exceed one pound (£1) whatever be the number of separate visits.

"2. When the accommodation is inspected at the same time with the measurement of the tonnage, no separate fee shall be charged for such inspection.

"3. *For the Survey of Emigrant Ships.*

	£	s.	d.
"*a.* For an ordinary survey of the ship, and of her equipments, accommodation, stores, light, ventilation, sanitary arrangements, and medical stores ...	10	0	0
"*b.* For a special survey...	15	0	0
"*c.* In respect of the medical examination of passengers and Crew, for every hundred persons or fraction of a hundred persons examined	1	0	0

"4. *For the Inspection of Lights and Fog Signals.*

"For each visit made to a ship on the application of the Owner, and for each visit made where the lights or fittings are found defective 0 10 0

"Provided that the aggregate amount of fees for any such inspection shall not exceed one pound (£1) whatever be the number of separate visits."

SHORT YARNS FOR SAILORS.—No. 5.

Pleasure-seeking Ashore.

Pleasure might be, and sometimes is, infused into all the incidents and circumstances of life; but in consequence of its frequently sensuous and sensual forms we have often to speak of it as a thing not in union but in contrast with the duties and business of life, as if they had to be indulged in by turns, a little of the one after a good deal of the other—like wine and beer at dinner-time, not to be made a meal of in place of the solids, but moderately to accompany them. Sir John Falstaff, you remember, used to reverse this rule, taking considerably more sack than bread, instead of more bread than sack. Pleasure, however, is not only a relaxation after the business of life, but is itself a part of that business, and has often to be sought for with almost as much effort as is required for the performance of business itself. Life, on the whole, is to most of us a very serious and difficult, and, to many, a very painful thing: all the more necessary, then, that it should be variegated by inspiriting play and harmless fun. We all need a little gaiety, even as a means of rightly accomplishing the purposes of our daily life; for it is the "merry heart" that "goes all the way"—that is, performs all the task; the sad one tires in a mile, and at that point is apt to stop, leaving the remainder of the journey unattempted. We all need music, dance, and song; and if we have not the skill to play, the gift of voice to sing, and the agility and elastic power to dance, we must do these things in another fashion; we must sing with the spirit though the voice be dumb; we must dance with the spirit, though the feet be still. There have been now and then a few men in the world in whom the elements have been so happily mixed and tempered that they have never once lost mental sight of the fairyland of the happy and the gay, even while sailing over life's stormiest seas. Even as they approached the grave they seemed to have caught a snatch or two of the beauty and harmony that exist beyond it. "As they drew nigh unto the house they heard music and dancing," or something equivalent in sound and movement of joy; for though sorrow may

"SCHEDULE III.

"TABLE OF MAXIMUM FEES TO BE PAID FOR THE MEASUREMENT, SURVEY, AND INSPECTION OF MERCHANT SHIPS.

"1. *For Measurement of Tonnage.*

	£	s.	d.
"For a ship under 50 tons register tonnage ...	1	0	0
,, from 50 to 100 tons ,, ...	1	10	0
,, ,, 100 to 200 ,, ,, ...	2	0	0
,, ,, 200 to 500 ,, ,, ...	3	0	0
,, ,, 500 to 800 ,, ,, ...	4	0	0
,, ,, 800 to 1,200 ,, ,, ...	5	0	0
,, ,, 1,200 to 2,000 ,, ,, ...	6	0	0
,, ,, 2,000 to 3,000 ,, ,, ...	7	0	0
,, ,, 3,000 to 4,000 ,, ,, ...	8	0	0
,, ,, 4,000 to 5,000 ,, ,, ...	9	0	0
,, ,, 5,000 and upwards ,, ...	10	0	0

"2. *For the Inspection of the Berthing or Sleeping Accommodation of the Crew.*

	£	s.	d.
"For each visit to the ship	0	10	0

"Provided as follows:—

"1. The aggregate amount of the fees for any such inspection shall not exceed one pound (£1) whatever be the number of separate visits.

"2. When the accommodation is inspected at the same time with the measurement of the tonnage, no separate fee shall be charged for such inspection.

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possibly be a necessary element in the future, as it certainly is in the present life, it is at least equally necessary that there should be delight and happiness in the home of souls be it where it may. The longing for pleasure is not in itself a guilty longing; even when it does not rise above coarse and sensual things it is entitled to some excuse and gentle consideration, for it is not the instinct which is wrong, it is the want of the proper regulating and refining accompaniments that has to be deplored. There is no class of men so irregular and impulsive in their pleasures as sailors. Unhappily, their minds seem quite out of balance when they get on shore. Pleasure of some kind they greatly need, but that which they seek and obtain rarely does them any good, and sometimes a great deal of harm; and the only way to alter this is to pay more attention to the culture and social environments of poor Jack. To try and induce anything like hardness and asceticism into his habits would be a vain endeavour; to make him outwardly and professedly very "pious" and evangelical would be equally hard work, and very far from pleasant in its results if successful. Something must be done for the poor fellow through the medium of his pleasures, by infusing a right spirit into them, not by depriving him of them altogether. He must be spoken to in a candid sympathising way, somewhat after this style: "Now, friend Jack, you have just come home from sea, and you want a little fun and enjoyment. Perfectly natural Jack! You want it as much as other people, and you are as much entitled to it, especially if you pay for it with your own money. Only remember that no man's fun must be of a kind to do moral harm to himself, and that no man's enjoyment must involve any pain to another. You would like to go to a dance, to waltz with a nice brisk young girl to lively music? Is there any harm in it? None whatever, to our thinking; only take care that your partner is a good and modest girl, and not one of those bedizened creatures who, for their own base and selfish purposes, hover continually about the paths of you poor sailors. You would like to go to a theatre? Is there any harm in that? None! provided you do not supplement the theatre with some other kind of night carousal that leads you and your companions to declare, in tipsy excitement, 'We won't go home till morning!' and provided none of the aforesaid creatures accompany you on the occasion. You would perhaps like a glass of something to drink and a pipe of tobacco? Is there any harm in that? None at all, as we think, provided one glass does not lead to half a dozen, and provided you do not get near intoxication, either whole way or half way. You find a pleasure in spending money? Sailors generally do; and it is a pity they do not try if there might not also be a little pleasure in saving it, with a view to that 'rainy day' which is almost sure to arrive at some time or other to men in their position. But if, Jack, you must spend your money,

spend it usefully and judiciously; buy things that you really want, or are likely to want, or things that minister in some way or other to your real good. Waste not a shilling on silks, velvets, or false jewellery, for the decoration of loose women, who can squander as much in a night as you can earn in a year. Spend your money, if you will, but spend it on your wife and children if you happen to be a married and family man, and you will find that when just and reasonable claims in that direction are satisfied, very little indeed will remain for vain and selfish pleasures. Such of you as are single, and still young, may possibly think that a sweetheart is one of the pleasures of life, the most desirable to have and to hold. If so, get sweethearts! The romantic time of life is by no means its worst period. There is an exquisite pleasure in loving and in being loved, and many essential qualities of character grow under that excitement notwithstanding its many illusions. Only, pray, let the sweetheart, in each case, be a decent, comely, respectable, neat, and modest girl, and not one of those bold, flaunting, painted, and powdered damsels, with all sorts of dyed feathers and flowers, and stalks and leaves, upon her head, and patches of tow protruding from the folds of her nasty chignon. But when a sweet, sensible, loving girl, and a hearty, honest, frank, and noble sailor, conceive a liking for each other, and would think it a pleasure and a privilege to meet 'By moonlight alone, at the grove at the end of the vale,' and there exchange kind and tender words, we would say to both of them, 'Meet! Keep the appointment! Be warm and loving; be honourable and true!' The man who has never felt a sympathy with lovers, who has never said in his heart 'God bless them!' is a strange piece of humanity indeed."

There is a class of pleasures which it is very desirable that sailors and all other people should enjoy, but, before they can enjoy them thoroughly, a certain amount of culture will be necessary, an upraising and refinement of the popular taste, and this, of course, is not to be done in a day. It may not be very near at hand, but still the time will assuredly come when the very poorest of the community will take a genuine pleasure, an intelligent interest, in visiting picture-galleries and museums, and when art will be of a somewhat nobler strain than it is now, and when catalogues and explanations will be less technical and more intelligible. Since music is now becoming pretty generally a part even of the commonest education, there is reason to hope that, by-and-bye, the popular ear will repudiate that music-hall comic or sentimental rubbish now so prevalent, and that even children will feel a taste for something better than the grinding of organs that are generally out of tune, and the blowing and blasting of those helter-skelter performers called German bands. Imagine a crew of sailors present at one of the performances of the Crystal Palace Band, where each player does his part with conscientious

care and admirable skill. Imagine these honest fellows grown capable of appreciating such music, and of being able to enjoy the compositions of Beethoven, Mozart, Haydn, Handel, and Mendelssohn. We are rather remote from that height at present, but who shall say that the future will not refine and upraise us? Among amusements of a less intellectual kind, but adapted well enough for sailors on shore, and for others of the general community, there are many perfectly innocent, considered in themselves, but, unfortunately, associated by some perverse accident or design with habits and practices which are morally harmful. There are billiard-playing, card-playing, horse-racing, rowing-matches, all pleasant pastimes enough, and not at all inherently wrong, but almost always associated with betting and gambling, and, in connexion with these habits, pernicious in the most intense degree. Separate, if you can, the innocent sports from the evils which have clustered parasitically around them, and most genial moralists would say, "Here are pleasures in which all, if they like, may lawfully indulge." But so long as the innocent and guilty pleasures remain intertwined, duty has no alternative but to abstain. There is a vast fund of refined and refining pleasures to which now, in our dulness and ignorance, we are insensible, but to which we must climb, and mount, and aspire. The pleasures that lie for the present above us ought to be sought for just as eagerly as those which lie on our own level.

After all, there is a class of quiet, exquisite, natural pleasures which lie within reach even of uncultivated minds. They do not require for the enjoyment of them the elaborate preparation of colleges and schools; they enter freely the innocent and unsophisticated heart. There is exquisite pleasure in a country walk or ride; in drinking in the morning freshness and the evening cool; in strolling through meadows and woods and by the margin of beautiful streams; in listening to birds, in watching the unfolding of leaves and flowers, in considering the lilies how they grow, and how every delicate little fern or flowering heath is rich in beauty and eloquent in suggestion. There is a pleasure in the cadences of the wind, in the glory of the sun, in the wondrous depth of starry night. There is pleasure in a rustic ramble with happy friends, and in a good tumble and frolic with little children amongst the new hay. There is a cheap, but genuine pleasure in these accessible things, and they are often enjoyed with more relish and grateful feeling by the so-called ignorant in their freshness and simplicity than by the so-called wise and learned in their weariness and artificiality. It is another instance of some things being hidden from the wise and cunning and revealed unto babes. These simple but exquisite pleasures are within the reach of simple men, but they require a certain purity of heart to enjoy them with delicious intensity.

One effectual way of diminishing the grossness of a sailor's pleasures on shore would be to provide him with some rational pleasures when he is afloat. There are in long voyages many days of fair weather and dead calm when organised amusements of the crew would be quite practicable. There might be music and dancing, dramatic entertainments, and reading aloud. We once knew a poor lad in a sailing vessel on an outward voyage to Ceylon, who, being a fair reader, made himself exceedingly agreeable to his mates of the forecastle, by reading aloud to them at intervals "The Wreck of the Golden Mary." Systematic amusement at sea, on practicable and fitting occasions, has already received some attention in the Royal Navy; but, so far as we know, it has not yet been much thought of in the Merchant Service.

E. A.

PETROLIA AND PETROLEUM.

THE age of candles and rushlights is passing away; the flickering, uncertain rays of the tallow dip will, ere long, be regarded as the light of other days, for a whole army of new and powerful illuminants has completely taken the shine out of the candles, from the clean and fashionable wax taper, down to the ill-conditioned and half-starved rushlight. The advent of gas was in itself sufficient to carry consternation into the ranks of the wax and tallow regiments; but now our dark hours are again invaded by a foreign contingent, which threatens even the dominant supremacy of gas. We allude to mineral oils. From time immemorial oils of various kinds have been employed to lighten the darkness of the world, but, until recently, those used have been obtained from animal and vegetable sources only, the mineral kingdom never being deemed capable of yielding such a substance as oil; and it is only the progress of science which has revealed the storage of large quantities of soft, combustible material in certain hard mineral substances. From coal was extracted naphtha, from shale, paraffin was obtained, and now we procure from the bowels of the earth large quantities of the actual coal oil, or petroleum, requiring only to be distilled and refined to be ready for service as an illuminating agent. In various parts of the world this petroleum is found, sometimes showing itself in the form of a spring, or being extracted in large quantities by means of deep boring and pumping. Our readers, no doubt, will remember the excitement caused in America by the petroleum wells of Pennsylvania: how men grew enormously rich in a short time by "striking ile." Things have toned down considerably since then, the novelty has worn off, and a steady

trade in petroleum is now established, in fact, it has become a necessity of the times.

In our own Dominion of Canada there are a great number of petroleum wells, the oil from which being sent to the New York market, is commonly known as American oil, and the Canadian produce is consequently not sufficiently known or appreciated. Let us make a journey to Canada, and look at the place which yields this oil, for there is much to be seen that is novel, instructive, and interesting.

We cross the Atlantic to Quebec, and go up the St. Lawrence, not stopping just now to admire the glorious scenery, because, if we did so, we should not reach our destination in the limited space of this article, for the scenery is altogether too splendid for a short description. Forward then, by land and water, passing through the Thousand Islands into Lake Ontario; then a day and a night on the lake, and at length reach Hamilton, Ontario, where we debark; still onward, by the Great Western Railway of Canada, to a place called London, on the River Thames, in the county of Middlesex, in the province of Ontario. Here we rest for the night, at the Tecumseh House, the best hotel of the town, but the most wretched, miserable place that can be imagined, and filled with a most extraordinary set of rough people. But the oil fields are not yet reached. It is necessary to go by a branch line to Petrolia, as its name suggests, the centre of the oil-bearing district of those parts. At six o'clock next morning we start, and soon signs of petroleum begin to manifest themselves. On approaching the end of our journey, rows of great black tanks are frequently passed, and the smell of the oil is in the air. At Petrolia, sundry kind friends are waiting for us, to whom we had been commended by letters of introduction, which latter will always call forth the most cordial welcome, and the most generous hospitality from the Petroleans. Walking from the station to the chief hotel of the place, our eyes are very wide open, looking at the strange sights that meet us all around. The settlement seems to consist of one very long street, the plank road all the way being in a dreadful condition of mud, holes, and irregularities. In the principal part of the street are the various stores for the sale of the common necessaries of life. All the houses are of wood, young men of the true settler type are standing about the street, the whole place wears an aspect of general untidiness and incompleteness. There is an entire absence of anything like humbug or snobbishness; our friends are sterling good fellows, rough and ready it may be, but still intelligent, enterprising gentlemen, overflowing with good nature.

After a capital breakfast, at which very good champagne is provided, a luxury hardly looked for in these wilds, we mount a wagon, and start for the oil wells. On getting clear of the street, a striking scene opens

on our sight. Stretching before us is a large extent of flat country, intersected with numerous "corduroy" roads; *i.e.*, roads made by logs, laid about two feet apart across the mud; here and there, gaunt and grey, rise towering tree-trunks, leafless, except at the highest point, where a few green leaves flutter out a miserable existence. Scattered about the scene are plain, wooden derrick-towers and buildings, each of which denotes a well at work, or defunct, or an abortive attempt to strike oil. Cottages for workmen and labourers, adapted only as cover for a time, show themselves about the district. The earth is everywhere black with mud and oil, and thick, sluggish streams slowly glide along with black oil floating on the surface; the air is heavy with the odours of petroleum. Many grey stumps of felled trees remain upon the land, and by contrast with the black earth, give a weird, strange aspect to the scene. The roads are indescribably bad, and nothing but persistent holding on enables us to keep our seats in the wagon. We stop at a well in full operation, and descend from our chariot. Here is a small steam-engine, 12-horse power, working a pump, which draws up a stream of thick, dark-green fluid—the crude petroleum—delivering it into a huge tank; this goes on all day, all night, and all Sunday—no rest until they draw the well dry. This well yields 150 barrels a day, 40 gallons to the barrel, and the men cannot think of stopping their pumps while such splendid results follow, especially if they can get fivepence or sixpence a gallon for the crude oil; you see, they are making their fortunes at that rate. It is very noticeable how rough and practical all things are, and how economically the wells are worked; wood being very plentiful, is used in many cases where iron would be with us. The vapour given off by the crude oil, as it is brought up, is conveyed to the furnace of the boiler, and used there as fuel, instead of coal or wood.

Let us look around still more, and try to gather some further information. The oil district, with three hundred wells on it at present, extends over about ten miles by four of ground, but it is generally believed that the whole immediately adjacent country is, more or less, oil-bearing. The business is very uncertain; a well may fail at any moment, and therefore the pumps are always kept going to make the most of it while it lasts. On the other hand, from causes unknown, a barren well may suddenly become productive. It has more than once happened that a 'cute speculator has set up a new well very near to one that had been in successful operation for some time, and has entirely drawn off the supply of the first established well. The proprietor of one well, which was yielding only a very thin stream of oil, conceived the idea of exploding a charge of gunpowder at the bottom of his well; he did so, and the result was that he was completely flooded with oil, and has ever since obtained 200 barrels a day. It was a happy thought; but it has since been tried many times

without success. All this uncertainty forbids anything like permanent costly establishments; the plant must be simple, inexpensive, and easily moved. Wells have to be given up so frequently that, in course of time, the whole district shifts its position, and in the place which once was full of life and bustle, there now reigns a dreary solitude, the deserted wooden buildings, and black rotting tanks, alone marking the sites of wells once prolific, but now extinct; the corduroy roads are hardly visible, for the long grass has nearly hidden them, and desolation is supreme.

A person entering upon the business, first obtains his land, for which he will have to pay about 100 dollars (£20) to 1,500 dollars (£300) per acre; but the wood will return about 50 dollars per acre. He then sets up his derrick-house and machinery, the whole of which would cost about £600, including drilling tools and everything. He commences to bore, and goes at it for, perhaps, ten days, having to pierce through, first, 100 feet of surface clay, and he lines the hole with wood; then he has to bore through about 200 feet of rock, following his drill with an iron tube lining, and then perhaps he has to go into 100 or 150 feet of the oil-bearing rock. If no signs of oil show themselves at 500 feet, he must give it up, and try afresh elsewhere; but one successful attempt in five repays him. A beginner need not take the whole risk of a well himself, for at Petrolia the principle of co-operation is largely adopted, and very few stand alone in the holding of wells.

The striking feature about life in Petrolia is that there is nothing beautiful about it. Money may be rapidly made by a careful man; and the end and aim of nearly everyone is to make money and go home. One striking exception to this rule is now at Petrolia; and he is working in a rough way still at his well. He is as rich as he can well wish to be; but he has no ties in the old country; he has grown into the rough and ready mode of living among the oil seekers, and does not now care to leave them. The absence of any refining influences in such a place as this would make it worse than a Californian settlement, but, fortunately, there are several leading men of culture and good sense (to whom the writer is personally considerably indebted for great kindness) who endeavour to the best of their ability, and not without success, to check vicious and lawless habits, and to mitigate the evil influences of the occupation and its comfortless associations.

We have seen how the oil is obtained from the earth; it may now be interesting to follow it briefly until it is fit to burn. Let us, therefore, go to the refinery. Here we find the dark-green, crude oil, as brought from the wells, stored in huge tanks sunk in the ground and banked over with earth. It is not wise to smoke in the immediate neighbourhood of this fluid, for the vapour is very explosive. From these tanks

the thick fluid is conveyed into a large still, where it is boiled until entirely vaporized, leaving a thick residuum of tarry, bituminous matter. This residuum is utilized for fuel; it is mixed with a strong jet of steam at the point of delivery, and is projected in the form of gas into the furnace, with a very powerful combustion. The apparatus for this purpose is called a "tar burner," and it is only necessary to use a little wood at first in order to get up a head of steam. The vapour of the petroleum is then condensed, and falls in a fluid state, mixed with water, into another tank. The water being heavier than the distillate sinks to the bottom, and is drawn off, and the petroleum, now a pale brown colour, and generally known as benzine, is pumped into a large circular tank called an agitator, in which it undergoes purification by means of sulphuric acid, caustic soda, and sulphur, large quantities of air being constantly forced in from below, and the fluid thus kept in a state of agitation. The impurities gravitate to the bottom when the agitation is stopped, and the refined oil is drawn off into another large tank called the bleacher, where it remains from ten to twenty hours, and grows white and clear from the effect of the light. It is then drawn off into wooden barrels and sent for sale, and a good deal of it ultimately reaches England, and lights our lamps.

The danger of petroleum has long stood in the way of its more general use, but it is found that by doubly refining the oil all danger is removed, for it will not then give off explosive vapour until heated to a temperature of 150° Fahrenheit. It may thus be rendered practically harmless, but it is more expensive and does not pay commercially at present. Many minds are now engaged in the further development of its powers, and we may be sure that the plentiful supply of the commodity, its valuable properties, and its cheapness, will not fail to make it much more serviceable than it has hitherto been.

The supply from the Canadian oil-fields during the past year was at the rate of 9,000 barrels, or 360,000 gallons a-week. This is an enormous increase over the yield of previous years, and, considering the magnitude of the present supply and the probable growth in the future, it would be well if the Canadian producers and the English buyers could establish another market than that of New York, where the rival oil from Pennsylvania is directly in competition with them, and where "smart" American traders are not slow to disparage the Canadian commodity to the advantage of the produce of their own country.

RULES OF FREEBOARD.—EXISTING AND PROPOSED.

THE last of the rules of freeboard which we propose to consider, is that brought forward by Mr. Withy, of Hartlepool. It is apparently the product of much laborious research and careful thought, and its author appears to have been impressed with a livelier sense of the difficulties of the question than have the advocates of the rough and ready methods of legislation upon this important subject. He says:—

"We should bear in mind the fundamental principle—viz., to avoid recommending any legislative enactment which shall offer an inducement to the building of ships possessing any one quality to the exclusion or detriment of other necessary qualities, or that shall obstruct the free scope which now exists for the building of vessels of various types according as the requirements of particular trades, or the legitimate views of owners may dictate. In few words, we must not ask the Government to offer a premium for building mere abortions of ships, such as the old measurement tonnage law undoubtedly gave us, nor must we attempt an act of uniformity that shall place a barrier against that charming variety of form and arrangement which enables us, in most things, ultimately to arrive at the best practice."

Mr. Withy proposes to fix freeboard by a proportion of the total volume of the ship. Each builder would be required to furnish a certified drawing of his ship from which the volume could be calculated, and the drawing would be verified by some check measurements taken by the official tonnage measurer. For old ships he proposes to use the tonnage measurement as the basis of freeboard; he does not put forward any proportion of free to immersed volume as the result of his own investigations, but suggests about 80 per cent., leaving the exact percentage to be filled in when the scheme is adopted. This ratio once determined, should, however, be applied restrictively to all classes of ships under all circumstances. The distinctive feature of the proposal is the way in which the difficult question of erections on deck is dealt with. Having first shown that if the total buoyancy of a long poop were included in the volume of the ship, in many cases the upper deck would be below water when the 80 per cent. rule was applied without qualification; he then suggests a method by which the volumes of spaces on deck should be taken into account. A definite proportion used in all cases alike would give, obviously, bad results, it is therefore proposed that the ratio to be used in converting tons of buoyancy in a poop, forecastle, &c., into tons of effective surplus buoyancy, shall depend upon the proportion of the height of each erection to the depth moulded of the

ship. In a shallow ship a poop should have less effect upon a freeboard than in a deep one. The ratio is obtained by finding the percentage, the height of the poop, &c., is of the depth of the ship, deducting this percentage from 100, and then dividing it by 3, "or any other number, if 3 is found in practice to be too much or too little;" the quotient being the percentage to be applied to the volume of the poop. In two examples of the application of this rule the results arrived at are: that in the case of a supposed shallow ship, each 100 tons in the poop counts as $16\frac{2}{3}$ tons of effective buoyancy, and, in a deeper ship, each 100 counts as 22. This only should be allowed, and the rule would be applied solely to erections on deck, which are really buoyant spaces, being securely built, and entered only from above. It is also suggested that a further modification might be made in favour of ships having the erections on deck placed amidships instead of at the ends. It is said, that "a point in favour of this would be, that it would encourage the erection of houses in a part where they would afford greater protection to engine openings, by raising the skylights and air-gratings higher above the sea. Evidently an "act of uniformity" may be condoned if its provisions are in accordance with Mr. Withy's views of what a ship ought to be. This proposed system of assessment of the buoyancy of spaces on deck is certainly better than giving them no consideration at all, and is also better than taking a fixed proportion of their tonnage, whatever may be their character and their relation to the hull of a ship; but it does not appear to be the result of an investigation of the reasons for, and purposes of, freeboard, so much as an empirical rule, framed with reference to the results given by it in certain experimental cases. In short, we say, that a number of ships being taken, and a freeboard marked which, in each instance, commends itself to the eye of a practical man, a rule is framed which, for each experimental case, would give the predetermined water line. Is it not more than probable that a rule thus framed will break down when applied to cases outside the special experience of its author?

Spar-decks are to be dealt with in the same way as erections upon deck, with the exception that the divisor $1\frac{1}{2}$ is to be used instead of 3—that is, *ceteris paribus*, a ton of spare buoyancy in a spar-deck is considered to be worth two tons in a bridge-house or poop. The definition of a spar-deck is, that it is constructed with the reduced scantlings usually allowed.

A difference in the proportion of spare buoyancy is also to be required for different proportions of length to depth. Twelve to thirteen depths in the length is the range of the application of the 30 per cent. rule, and for every depth below or above this, the free side, in feet and inches, is to be reduced or increased by 5 per cent. of itself.

The whole plan is thus summed up :—

1. "Calculate the buoyancy up to the lowest point of underside of main-deck, add to this again the buoyancy of all water-tight erections assessed on the principle suggested.

2. "Take 70 per cent. (or any other approved percentage) of the total thus arrived at, and stipulate that this shall be the maximum load displacement, except as affected by the next provision. The draught and side corresponding to this being ascertained from the scale of displacement.

3. "In cases where the length is less than twelve, or more than thirteen times the depth moulded at the lowest point of the sheer, a certain percentage shall be substracted from or added to the lineal height of side obtained from No. 2, according to an approved scale."

Mr. Withy also proposes to alter the recognised method of measuring freeboard, a method which, by the Merchant Shipping Act of 1873, is now prescribed by law. He would measure it from the under side of deck, alleging that ships with wooden decks have, by the common method, an unfair advantage over those with iron decks, whereas, on the other hand, he is of opinion that "encouragement should rather be given to owners to adopt iron decks." Iron decks have undoubtedly many great advantages, but is it not better to leave such considerations to tell for themselves, it being certain that if the balance of advantage be ultimately in their favour, shipowners will require, and builders will use, the preferable material. We are of opinion that the present method of measuring freeboard gives no advantage to wooden decks; the upper surface of the deck is certainly the boundary of spare buoyancy for purposes of reserve stability, whether the deck be of iron or wood, and if the substance of the deck adds little to the floating power of the ship, it subtracts nothing from it, as does the iron deck. We are content to leave the question of improvements in the structure of the ship to the enterprize and skill of those who are most interested and best able to judge of their utility, believing that the wisest policy of the Government in all such matters is to allow each man to be the best judge of his own interest, and to refrain from fettering the natural and free development of an art already restricted enough by the registries.

At the close of the paper read by Mr. Withy, before the Institution of Naval Architects, from which we have already quoted, he expresses, somewhat diffidently, his opinion that "the questions of scantling, condition, and equipment, should *not* be considered in fixing the maximum load line, for this reason, that I think all will accept it as an axiom, that *no* ship should be allowed to proceed to sea, *at all*, that was not strong enough to carry the weight which the prescribed reserve of buoyancy would allow her. Hence," he goes on to say, "I think it should be

more an owner's question, in purchasing a vessel, whether he would look at first cost or durability as the more important consideration; for, if the stronger ship were allowed to load deeper, the wear and tear would be increased, and her period of existence would be reduced proportionally by living a harder life."

Why should owners be compelled to take out their extra expenditure merely in greater endurance? If a ship is of such a character, and is so stowed that she has a sufficient amount of reserve stability, in either case, is it not reasonable for her owner to demand the liberty of loading her to her own safe limit, determined by her strength, and not to the limit of a regulated scale merely? The idea evidently is to fix the ratio of free volume upon the basis of the ship which is just fit to go to sea at all, and let shipowners take out their expenditure on good ships merely in their longer existence. It has been stated that Mr. Plimsoll desires to fix his restrictions on freeboard on the basis of the best possible ship. We thus see the dilemma in which the advocates of restrictive legislation are placed; either regulate freeboard to suit ships just good enough not to be condemned, and, as a consequence, inflict a loss upon the owners of good ships, who then cannot get all out of them to which they are fairly entitled; or, fixing freeboard by the best ship, give Government sanction to the overloading of bad ships. We know that it is proposed to increase the freeboard of ships as they deteriorate, but can we depend upon this being efficiently carried out by any surveyors whatever. Is it not better to leave it to those who ought to make it their business to know all about their ships, and who have every facility for so doing? holding every shipowner responsible for the condition and loading of his ship, making searching investigations in all suspicious cases, taking care, at the same time, that trouble and expense shall not be uselessly thrown away? Such is the policy which has always been advocated in this journal, and which, we are glad to see, has been further developed by the Merchant Shipping Act of 1873.

In a former article on the subject of freeboard, we had occasion to remark upon the great importance of the proper distribution of the weights in a ship. It is a significant fact that no one of the advocates of legislation upon freeboard, proposes legislation upon stowage. It is simply impracticable. Mr. Withy says, "I do not see either how varieties of cargo, or length of voyages, *from the great complications of such matters*, can be allowed to affect the load line;" and, again, "the manner of stowing the cargo, although a very important consideration, I think, must be left to the owners. It is quite possible that, as things now exist, many a well-stowed, though overladen vessel, may be in a better condition than a vessel with much less weight on board, but badly stowed. At the same time, however, we must not argue from this, that

because we cannot easily regulate *both* evils, we should not reduce *one* of them to a minimum." The general principle may be very good, but how if we cannot do one without being credited with doing both? If we take the shipowner's business so far out of his hands as to regulate his freeboard for him, is it not natural that he will act as if all responsibility were shifted from him to the Government, and thus a regulated load line would produce a false sense of security, which would lead to much evil, perhaps, as much, or more, than it would prevent.

ERRATA.—In August number, on page 657, line 9, for "a higher or a lower percentage," read "as little as three, or as much as ten per cent.;" and in same page, line 27, for "the same ship," read "a ship."

ANTICOSTI ISLAND.

BY WILLIAM SMITH, ESQ., DEPUTY MINISTER OF MARINE, CANADA.

THE island which bears the name of the heading of this article lies directly in the mouth of the St. Lawrence, between the 49th and 50th degrees of latitude, nearly the same as that of the north of France, and contains an area of 2,460,000 acres of land of the best quality, similar, says Sir William Logan, the eminent Canadian geologist, to the fine arable soil of Canada West, and the Genesee County, New York State; it is one-fourth larger in size than Prince Edward Island; it possesses over 300 miles of sea coast, is about 140 miles long, and 35 miles broad in the widest part, with an average breadth of 27½ miles.

Anticosti is made mention of so long ago as 1660, in the geographical folio work of the celebrated loyalist Dr. Peter Heylyn, known as "Cosmographia." He says that the proper name of the island was *Natiscotee*, which it is supposed was corrupted by the Spaniards, who fished in and off the St. Lawrence at that period, to its present appellation. He reports that the island was then held by a tribe of Indians, who were exceedingly kind and friendly to such mariners as landed there. The fief of the island was granted by Louis XIV., about 1680, to Sieur Louis Joliet, as a recompense for his discovery of the mouths of the Mississippi and the Illinois, and other services rendered to his Government; and it seems to have been held of so little account in its primitive state that Père Charlevoix, writing about 1712, in his "Histoire du Canada," says that Joliet "would, perhaps, have preferred one of the smallest lordships in France." In La Houtan's "History of

Canada," is a chart of the St. Lawrence, and a plan of the island, showing Joliet's Fort on the western flank. La Houtan was a French Marine officer, and he mentions that Joliet was captured in his boat off the island by the English expedition against Quebec, in 1690, under Admiral Phipps, but released after the failure of that expedition. Mr. T. Aubury, who sailed with General Burgoyne's army in 1766, devotes three pages of his work, "Interior Travels Through America," to the seal fisheries of Anticosti, and the method of catching those animals between the continent and the adjacent islands.

So much for the early records of Anticosti. When the feudal system became abolished, which had long prevailed under the French domination of Canada, there being no tenants on the island, the seigneur, or lord of the manor, became possessed of the whole soil in fee simple, since which time it has been held jointly by a variety of persons, chief amongst whom are the Forsyth family. The title to this immense possession seems to have been fully acknowledged by the Parliament of Canada, as an Act was passed during the last session (in the spring of 1878) incorporating a company to develope the resources of the island.

Anticosti slopes gradually from its elevated northern coast to the grassy savannahs which skirt the southern shore, and thus, in a great measure, the fertile portions of the country are protected from the severe winter winds. Its climate is very healthy, and it certainly is not severer than that of the other maritime provinces. The atmosphere is pure and clear, and free from the fogs which are so frequent on, and around, Newfoundland. The winter's cold is considerably tempered by the waters of the Gulf and River St. Lawrence, and the heat of summer is, to a certain extent, moderated by the same influence. Vegetation progresses there very rapidly, and crops come to perfection in good season. The soil is of good quality, being a rich loam intermixed with limestone; valuable forests are to be found on the greater part of the island, and although the timber generally is not of the largest size, it is of a superior quality, and well adapted for ship-building.

The fisheries around the island, which have been hitherto comparatively neglected, are valuable and important. Speaking of them, Commander Lavoie, of *La Canadienne*, in his report, in 1870, to the Dominion Government, says: "This island is beginning to be frequented, and settled by hardy fishermen, tempted by the desire of participating in its rich fisheries, which up to the last few years were, comparatively, unexplored. . . . . The importance and value of its fisheries have increased along with the number of fishermen. The waters bordering on Anticosti are stocked with the same kinds as are to be met with on the south and north coast of the St. Lawrence."

In his report for last year (1872) Commander Lavoie says, "Large

shoals of herrings visit its shores at about the same time they repair to Pleasant Bay, Magdalen Islands. A schooner, from Prince Edward Island, caught last spring with the seine 1,100 barrels of herring in one day." He goes on to say, "The whole coast of Anticosti abounds with fish of all sorts, but harbours are scarce, even for fishing boats. Cod fish on this coast are all large, and no finer are seen even on the Miscon and Orphan Banks." The number of fishermen frequenting its banks increases every year. Even when cod-fishing was a failure everywhere else in the Gulf, it did not fail at Anticosti. Halibut are so plentiful that 199 barrels were taken in one day.

The seal fishery, which could be carried on here as well in winter as in summer, might be turned to profitable account, large numbers of these animals being visible during the former season, and thousands of them being observed in the summer and autumn at the entrance of almost all the bays and rivers, where they remain comparatively unmolested.

Hunting on the island is of considerable value, though of far less importance than its fisheries. The animals whose skins are of marketable value which are found on the island, are black bears, which are very abundant, otters, martens, and the silver, grey, red, black, and, sometimes, the white fox. Great quantities of ducks, geese, and other wild fowl resort to the lakes and the bays of the island.

There are numerous natural harbours round the coast, which are comparatively safe in all winds—Ellis Bay and Fox Bay being especially so. The former is distant about eight miles from West End Lighthouse on the south side; the latter is fifteen miles from Heath Point Lighthouse on the north side. Ellis Bay is two miles in breadth, with deep water three-fourths of a mile from shore, but only with from three to four fathoms in shore. Fox Bay is smaller; the distance across its mouth is one mile and a half, with deep water in the centre, extending up the bay nine-tenths of a mile, but shoaling near the shores of it, the whole length of the bay being one mile and two-tenths. Mr. Gamache, who has resided at Ellis Bay for upwards of twenty-five years, states the harbour to be perfectly secure in all winds, and at all periods. A gentleman from England, in 1853, a member of Lloyd's, who visited the island to inspect a vessel which had been wrecked on the coast, declared he considered the harbour "a most excellent one," so much so, that he should, on his return to England, make it specially known at Lloyd's, and added, further, that there are many places in England, and other countries, carrying on a large maritime commerce, which have not got so deep, so spacious, or so safe a harbour as Ellis Bay. This gentleman had been three times round the world as captain of an East Indiaman.

The excellent position of Anticosti, in regard to ships, commerce, &c.,

is easily seen, when we remember that every vessel must take one or other of the channels formed by the island, whether having passed from the Atlantic, or intending to pass to the ocean through the straits of Belle Isle, through the more frequented passage between Newfoundland and Cape Breton, or through the Gut of Canso, or whether running between Quebec and those portions of Canada and of the maritime provinces lying on the Gulf of St. Lawrence. Vessels taking either of the channels formed by the position of the island, must pass close to the island in consequence of the comparative narrowness of the northern one, and of the strong south-east current which always runs along the southern channel. To avoid this, and the risk of being driven on the rock-bound coast of the south shore of the Gulf and River, vessels generally stand out till they make the West Point of Anticosti, close to Ellis Bay. The inner anchorage of this has a depth of from three to four fathoms at low water, with excellent holding ground (gravel and mud); the outer position of the anchorage could be materially improved at a trifling expense, so as to be able to contain in safety, during all winds, almost any number of vessels of the largest size. If docks were constructed at Ellis Bay, with a patent slip, it would be an admirable position for the repair of vessels stranded or damaged throughout the Lower St. Lawrence, many of which are now broken up by the sea, or dismantled by wreckers before assistance can be obtained from Quebec. For steamtugs employed for the relief of vessels in distress, this might be made an excellent station; here, also, a few steamers or gunboats could command the two entrances to the river, or send out from this convenient and central spot cruisers to any part of the Gulf.

The establishment of depôts of coal at Ellis Bay and Fox Bay would be an advantage, the importance of which it would be hard to estimate, coal being easily procurable from Nova Scotia, and laid down at either harbour, at a cost not exceeding from 3 dols. 50c. to 4 dols. per ton. Considering the fact that upwards of 2,000 vessels annually arrive from Europe in the season, besides a large fleet of coasting and fishing vessels, all of which must pass within sight of the island, some idea can be formed of the importance to be attached to the position and capabilities of these harbours for commercial purposes.

The company which has been formed for the purpose of colonizing the Island of Anticosti, and for working and developing its resources, propose to lay out town sites at Ellis Bay, Fox Bay, and at the South West Point. The chief town will be at Ellis Bay, where the principal place of business will be established. The beautiful situation of the first of these places, with its bracing sea-air must eventually make it a resort for thousands of pleasure-seekers, since sea-bathing could there be

combined with many other summer sports and amusements. The capital of the company is 2,500,000 dols., divided into 25,000 shares of 100 dols. each. The island is to be divided into twenty counties, of about 120,000 acres each, subdivided into five townships. It is further proposed to lay a submarine telegraph cable to connect the island with the mainland; to build saw-mills and grist-mills, establish a bank and a general hospital, churches, and schools, and to establish, moreover, five fishing stations, in different parts of the island, where temporary buildings are to be erected for curing and drying fish.

Operations and improvements of such a kind have everywhere had the most beneficial result upon the industry, wealth, and general progress of the country in which they were attempted, and with the great resources and favourable geographical position of the Island of Anticosti, there is no reason to doubt that they will be attended there with similar results.

Sir William Logan, in his "Geological Report of Canada," after referring to deposits of peat, or peat-bogs, in different parts of Canada, says, "the most extensive peat deposits in Canada are found in Anticosti, along the low land on the coast of the island, from Heath Point to within eight or nine miles of South West Point. The thickness of the peat, as observed on the coast, was from three to ten feet, and it appears to be of an excellent quality. The height of this plain may be, on an average, fifteen feet above high-water mark, and it can be easily drained and worked. Between South West Point and the West end of the island, there are many small peat bogs, varying in superficies from 100 to 1,000 acres."

Near South West Point there are several large salt ponds, which, if labour was abundant, might be turned to a profitable account in the manufacture of salt; a manufacture which would become of some value to a great part of our North American fisheries, which, as well as the greater part of Canada, are now supplied with salt from the Bahamas, and from England, or the United States; and for curing fish and provisions, bay salt, formed from the sea and from salt ponds is the most valuable. In consequence of their not having been a sufficient supply of salt upon the island, an immense quantity of fish caught at Anticosti, a year or two ago, were rendered useless. This was alluded to by Commander Lavoie, of *La Canadienne*, in his report for 1871, where he says that "fishing was abundant this season, the yield being reckoned at 9,500 quintals of cod . . . but the greatest drawback arose from the difficulty experienced in curing the fish, from the want of salt." Some of the Bahama Islands are retained, merely on account of the salt ponds which they contain, and in Ceylon a large revenue is derived from the salt works carried on in that island.

In Commander Lavoie's report for 1872, quoted from before, he says, that geologists and others, who have visited the interior of the island, agree in stating that its soil is rich, and that more than one million acres can be cultivated with advantage. Clearances have already been made at Gamache (Ellis' Bay), at South West, and at West Point, where the vegetables and grains of the district of Montreal and Quebec flourish. Stories, however, of the numerous wrecks that have occurred on the shores of Anticosti, have spread such a terror that, up to 1871, nobody had thought of settling there. The reefs of flat limestone, extending, in some parts to one mile and a quarter from the shore; the want of anchorage off a great portion of the coast; and, above all, the frequent fogs, justify this belief, in part; but not in so great a degree as to render reasonable the dread with which they seem to have been regarded, and which can only have arisen from the natural tendency to magnify dangers, of which we have no precise knowledge.

Four lighthouses are erected on Anticosti; one on Heath Point, at the east end of the island; another at South West Point; the third on West Point; and the fourth at South Point, or Bagots Bluff. That on Heath Point is a round tower, built of a grayish white limestone, quarried on the island, and is ninety feet high. It shows, at an elevation of 110 feet above the level of high water, a fixed white light, which in clear weather should be visible from a distance of fifteen miles. The lighthouse on South West Point is built of the same stone as the previous one, quarried on the spot, is seventy-five feet high, and of the usual conical form, exhibits a white light, which revolves every three minutes, and is visible at fifteen miles, with the eye ten feet above the sea; with the eye at fifty feet, it can be seen nineteen and a-half miles, and with the eye at an elevation of 100 feet, it will be visible about twenty-three miles. The third lighthouse, erected on the West Point of Anticosti, is a circular stone tower, faced with white fire brick, 109 feet in height. It exhibits, at 112 feet above high-water mark, a fixed white light, visible from a distance of fifteen miles. A gun is fired every hour during fogs and snowstorms. The lighthouse at South Point is a comparatively new building, the light having been first exhibited in August, 1870. It is a hexagonal tower, painted white, seventy-five feet above high-water mark, with a revolving white flash light every twenty seconds. It should be seen at from fourteen to eighteen miles distance, and is visible from all points of approach. A powerful steam fog-whistle is also stationed there, about 300 feet east of the lighthouse. In foggy weather, and during snow-storms, this is sounded ten seconds in every minute, thus making an interval of fifty seconds between each blast, which can be heard in calm weather, or with the wind from nine to fifteen miles distance, and in stormy weather, or against the wind, from three to

eight miles. The lights are exhibited from the 1st of April to the 20th of December of each year.

Provision depôts are also established on the island for the relief of wrecked crews. The first of these is at Ellis Bay, the second at the lighthouse at the South West Point; the third, which was formerly at Shallop Creek (Jupiter River), was this year, removed to South Point, where the new lighthouse and steam fog-whistle have been located, and the fourth at the lighthouse on Heath Point. Direction boards are erected on the shore, or nailed to trees, from which the branches have been lopped off, near the beach, and on various parts of the coast. These boards are intended to point out to shipwrecked persons the way to the provision posts.

Vessels are more frequently lost on Anticosti, in the bad weather, at the close of navigation, than at any other time, and their crews would perish from want, and the rigours of a Canadian winter, if it were not for this humane provision, made by Government, in the absence of settlements on the island. As, however, the population begins to increase, and dwellings become scattered about, there will be the less urgent need for these depôts.

The currents around the Island of Anticosti are very variable and uncertain, and to this cause may be attributed many of the shipwrecks that have from time occurred there. At the north point of the island there is a current almost always setting over to the north-east, being turned in that direction by the west end of the island. Confined as it is, within a narrow channel, it is very strong. All along the south coast, between the south-west and west points, the swell and the currents both set in shore, andthe bottom being of clean, flat limestone, will not hold an anchor. It is also by no means uncommon in summer for the breeze to die away suddenly to a calm.

The tide round the island only rises from four to seven feet.

It not unfrequently happens that when the current from the northward is running, another from the W.N.W. comes along the south coast, in which case they meet at a reef off Heath Point, and cause a great ripple, or irregular breaking sea. This takes place when a fresh breeze is blowing along the land on either side of the island. A wind has been observed on the north side from N. or N.E., whilst that on the south side was W.N.W., and yet never meeting round the east end of the island. Between the two winds there is usually a triangular space of calm, and light baffling airs, extending from five to eight miles. In the space between the winds there is often observed a high cross sea, and constantly changing light airs, which would leave a vessel at the mercy of the current, and in great danger of being set on the Heath Point reef.

Streams of excellent water descend to the sea on every part of the

coasts of Anticosti. They are, for the most part, too small to admit boats, becoming rapid immediately within their entrances, and even the largest of them are barred with sand, excepting for short intervals of time, after the spring floods, or after continued heavy rains.

There is no doubt that, in a very few years, there will be a numerous population on the island, as applications for land are being constantly received by the Anticosti Company, and the survey is being pressed forward with all practicable speed. Had the island been thrown open to settlement years ago, it would be in a very different position, commercially speaking, from what it now is; but once opened, and found to be equally productive with the maritime provinces and Prince Edward Island, there is no reason why in a few decades it should not rival the latter. For long neglected and discarded, Anticosti now has a chance of prominence, and the Dominion will hail the advent of another link in her chain, which, though it may never assume the title now borne by Prince Edward Island, "The gem of the Gulf," may yet prove as valuable a jewel in the diadem of Confederation.

THE EFFECTS OF UNEQUAL HEAT ON THE COMPASSES OF IRON SHIPS.

"*Clown.*—My Lord, see! he has started a hare?
Duke.—Well, fool, let her be run down."—*Old Play.*

THE mariner's compass is at once a source of safety and a source of danger. Where it is carefully watched, from day to day, and, if need be, from hour to hour, and where it is, as it were, kept under such strict and intelligent surveillance as shall enable the mariner to note its often varying deviation, and to apply the so-called "errors," as they arise, the compass is invaluable; but, on the other hand, where it is not watched, and where the causes of deviation are not understood, and where overmuch reliance is placed on it as a guide, it leads to danger. So long as the compass is treated by an intelligent and watchful master, as a useful and capable servant, it may be relied on; but if once confided in, without due intelligence, and without a knowledge of the effects of outside influences on it, the good servant becomes the bad master: the otherwise faithful guide becomes the false friend.

The correction of compasses for semi-circular deviation is one of the greatest steps yet made towards the safe navigation of iron ships at sea; but, as that correction, good as it is, can only be accurate for the latitude in which it is made, even that correction becomes of less and less

value to the mariner, as the ship gets into other latitudes, or becomes subject to new or varying influences. Hence it has always appeared to us that, as contributing to the safe navigation of an iron ship, a knowledge of the subject of compass deviation by the master, watchfulness, and a ready method of constructing a table or diagram of deviation, whenever an alteration in the compass is discovered, are, at least, as essential, if not more essential, than absolute adjustment of the compasses in port. The means for constructing a card of deviation would, of course, be of little value in the case of a ship running N. and S., and, consequently rapidly altering her magnetic latitude. A compass book should always be kept and the deviation noted on every course steered, the amount of heel being always noted at the same time. In approaching the land, the table of deviation constructed on the voyage would be very useful, and a master ought never then to trust to the chance of observation for correction of each course steered. The work of adjusting in port can be done by skilled hands, and under conditions and influences of heat and cold well-known, and, therefore, may be done completely and perfectly. It may, however, on the other hand, be done by unskilled hands, and done imperfectly. The master of the ship has her under his command at sea, and is with her under varying conditions of atmospheric and other influences. It is, therefore, to the masters of ships, first, in seeing their compasses properly placed on board,—and, secondly, in watching the compasses, and being able to estimate and allow for varying deviations at sea, that we look for safety, rather than to minute arrangements in port.

In very many cases a master, or an officer, pleads as justification or extenuation of the loss of his ship, that the compasses were in error. This plea means, if it means anything, either that so-called "errors" existed, which he knew, and which he did not allow for; or that an alteration in the deviation had suddenly manifested itself, for which the officer of the ship could not account, or which he did not suspect, and of which he sometimes alleges he was unaware, until after the casualty had happened.

There is reason to believe that these so-called, and in many cases unknown, "errors," in the compass, are, in fact, more frequent than is generally suspected by mariners; and there is further reason to believe, not only that they are frequent, but that they are temporary and ever-varying. If this be so, they must be a source of great danger to our iron ships, a danger that will increase in proportion as the existence of the "error" is unsuspected, and as power on the part of the master to detect its exact nature and amount is wanting.

We propose to call attention, not learnedly (for we do not launch into abstruse science), but generally and broadly, to a point that has suggested

itself as being one source of danger: viz., the effects of unequal and varying distribution of heat over an iron hull at sea. This point may, possibly, already have formed the subject of learned papers; and if it has done so, we shall be glad if our readers will refer us to some of those papers; but whether it has or has not been treated of before, we can affirm that in no book that we have seen, published for every-day use by masters and mates, is the point pressed on the attention of the student, or held up to the mariner as being specially worthy of his earnest attention. This article is not intended to be deep or exhaustive, but purely suggestive. If it should contain anything worth consideration, and should be kindly received, the writer's object will be gained; if it should form the subject of hostile criticism, the writer will be satisfied, for he will rest in the belief that the subject is at least of interest.

To begin with, let us take three cases by way of illustration:

1. In an iron steamship going up the Red Sea, the master noted that the deviation in the evening was different from the deviation in the morning.

2. In an iron steamship in the Atlantic, making a passage from Liverpool to New York, the master found an alteration in his compass of ten degrees in one hour. This happened when the ship was running along the shoals in 25 to 30 fathoms of water, between Georges and Nantucket. Sudden change of deviation is common between Sable Island and Nantucket, though, except on this occasion, we have not heard of it exceeding five degrees. It is partly occasioned by the rapid change in magnetic latitude, but in a great measure, we believe, by the alternate bands of warm and cold water.

3. In the case of an iron steamship in port, a deviation of ten degrees was observed. In this case the sun was shining brightly on one side of the ship, and the other side was shaded.

How are these errors to be accounted for?

In "Bakewell's Electricity," page 229, is a passage as follows: "The development of heat being a characteristic phenomenon of an electric current, it was inferred that heat was also capable of developing electricity. The satisfactory proof of this inference is due to Professor Seebeck, of Berlin; and though this interesting branch of electric science has yet made no important progress, sufficient has been done to prove that heat electricity and magnetism are correlative forces. All that is necessary for the development of thermo-electricity is to heat any metallic body irregularly at its extremities." . . . "The quantity of electricity excited is, to a certain point proportionate to the different degrees of temperature communicated to different parts of the same metallic bar, and does not depend on the absolute heat. Thus the application of ice will produce an electric current, as well as the application of heat, and by applying ice

to one corner, and (heat) the flame of a spirit lamp to the other, at the same time, the effect is greatly increased."

Is it not possible that we have in this a clue to the secret for which we are searching, and is it not possible that the fact of the *City of Washington*, being out of her course, was owing to the action of unequal heat on her hull, and the consequent effect on her compasses? The iron ship steaming up the Red Sea would have the rays of the sun directly impinging on one side of her black iron hull in the morning, and on the opposite side in the evening. Both in the morning and in the evening the hull would be unequally heated, but in opposite directions, thus producing varying currents of electricity in the hull. May not this account for the difference in the deviation of the compass at evening as compared with the morning? The master of that ship has not been able to account for it to this day. The iron steamer in the Atlantic, to which we have referred, may have suddenly gone from warm water into cold water, or *vice versâ*, and this sudden cooling, or sudden warming of the bottom of the ship, as compared with warmth or coldness pre-existing in the whole hull, may it not have accounted for the alteration of 10 degrees in the compasses in one hour, referred to above?

Then, again, one of the most, if not the most, prolific source of danger is the heeling deviation, the amount of which is rarely determined by the compass adjuster; and masters who do not insist on ascertaining it for their own information, are subject to an unsuspected error, which, in iron steamships, with deck-houses, &c., of iron, is often enormous in its proportions; not unfrequently, if the compass is improperly placed, it may be half a point for each degree of heel, so that fifteen degrees of heel, not uncommon in narrow ships grain laden, may mean seven and a half points; or, taking the heel fifteen degrees each way, fifteen points. Few compass adjusters, if they had any option (and sometimes they have not), would place a compass so badly, but we are simply showing what may happen. We are not writing at random, but instancing what we are well advised has happened.

We may easily understand from this how it happens that nautical assessors often find that a ship has steered a course that ought to have taken her clear of the land, and are entirely unable to account for the stranding. Everything depends on the master of the ship, and if he is not alive to the numerous sources of error, no legislation in the world will help him.

We sympathise with the captain of the *City of Washington*, as we are fully advised of the great difficulty of safely navigating an iron steamship in the Atlantic, especially when nearing the American coast, without observation. The anxiety of running through 1,600 miles of fog and the constant watchfulness entailed are not readily forgotten by those on

whom they have devolved, and are altogether unappreciated by the outer world.

We began this paper by stating that we only wish it to be a modest attempt at raising discussion and spreading information. If there should be something in it, and we would timidly hope that there is, then we would suggest that more good may be done by calling the attention of owners and masters to these points, than in legislating for compass adjustment, and for the examination of compass adjusters.

OUR GREAT PORTS.

DUBLIN.

IN historical documents the "fair city" is called, variously, by the names of Divelin (so-called by the Danes), Dyvelin, Dyflin, and Dublin. Hadyn says it was anciently called Aschcled; but this appears to be another way of expressing the native Irish term of Ath-cliath, or Hurdle-ford; for it was anciently called, in the Erse, Bally-Ath-Cliath-Duibhlinne, meaning, the Town of the Ford of Hurdles on the Blackwater. This is, probably, the correct etymology, and the latter term has given it its present designation. Why it was called the Blackwater is, in all likelihood, owing to the tradition that the daughter of one of the ancient chiefs was drowned there. She was called Auleanei; and her father Alpinus, in her commemoration, is said to have called the place after her name. Hence it was recorded by Ptolemy as Eblana, in his geographical account of the island, and, it is said, afterwards to have been corrupted to Dublana. This version does not seem to have the same etymological weight as the former one.

The place is said to have been first built A.D. 140; but Alpinus was the chief, who, in the year 155, brought "the then rude hill into the form of a town." Since then it has been the scene of many vicissitudes and contentions. St. Patrick founded the cathedral, now called by his name, and introduced Christianity there in the year 448. There the "Oestmen," or Danes, contended for sway, and surrounded it by walls at the close of the eighth century. They occupied it, more or less, till the crushing defeat at Clontarf, five miles from Dublin, administered to them by the famous Brian Boiroimhe, in 1039. Another century and a half had scarcely elapsed before another enemy appeared in the shape of the famous "Strongbow," who took it by storm in 1171. He died there a few years afterwards, and was buried in Christ Church Cathedral. The next year Henry II. arrived there to take possession of

the kingdom, having been so authorised by the Pope, who had issued a bull for that purpose. From that period the history of Dublin is that of Ireland, generally. The native princes having all submitted to Henry, it became, in reality the capital of the whole island. From that time, it has been held in the grip of the English. There are, however, a few interesting events which are worthy of noting, as of more especial individuality. Of such are the town charters. The first was granted in 964, by Edgar, in which he called the place *Nobilissima Civitas*. The next was by Henry II., in 1173; and another by James I., in 1605. The first mayor was Thomas Cusack, who was installed in the chair A.D. 1308, and the title of "Lord Mayor" was given in the year 1665. The University was founded in 1591, and the Marine Society in 1766.

Of military movements connected with the place, the most noted are the arrival of Cromwell, in 1649; the rising termed "The Rebellion," in 1798; and that of Emmett's insurrection in 1803. The political contests, however much Dublin may have been the arena, belong more especially to general Irish history.

Dublin is not famed for any particular trade. The principal part of the citizens are employed in shopkeeping, and handicraft industry, such as cabinet-making, for the home consumption of the population, as well as for supplies for the interior of the country. Formerly the tabinet and poplin textures were much in repute as a manufacture there, also silks, and linen; but these are all, more or less, decayed branches of business. The manufacture of poplin is said to have revived since the exhibition of 1851; but the really flourishing businesses are those relating to apparel, and common consumption. In the production of textile fabrics, the first, in chronological importance, in the British Isles, was that of wool, and then silk; but in Ireland linen took the lead, and now has become the staple there. Had, however, the manufacture of silk and wool been not unfairly dealt with, they might have flourished much more than they have done. Had the fostering influence of bounties, when needed, been applied, say to cotton, as it has been to the linen trade, that manufacture might have been the one of most importance to Ireland, as it is to England and Scotland at the present day. The inconsistent treatment by the legislature of the various trades will tend to prove this statement. Six hundred years ago, the manufactures of wool were admitted to English markets from Ireland *duty free*. In the fourteenth century, the Irish woollens had become so famous that they were exported to Italy in great quantities. The trade prospered so much that it excited the jealousy of the English traders. The great Sir William Temple shared the paltry feeling. William III., at the request of his Parliament, passed an Act for its discouragement, by imposing heavy duties on its exportation. This gave the manufacture a fatal blow, from which it never

recovered, alth ough a spasmodic attempt was made in the latter part of the last century to bolster it up by clothing the army with Irish cloth. This manufacture, during its days of prosperity, existed to a considerable extent in Dublin. Likewise the silk manufacture received a similarly fatal thrust by an Act passed in 1786, which threw hundreds of workmen out of employment. Poplin manufacture was first introduced by some French Huguenots, in the time of William III.; and a descendant of one of them erected the Weavers' Hall, in the year 1745. The manufacture continued to flourish till the period of the Legislative Union (accomplished 1st January, 1801), when it gradually declined, owing, no doubt, to the exodus, of the more opulent classes when the seat of the legislature was removed.

A writer observes, that "At the time of the Union, and for some years afterwards, the 'Liberties' presented a scene like the business part of Manchester. Fully forty thousand people lived by the employment given there." The "Liberties" was the part of the city where the silk trade had its abode. Now the place is entirely desolate. How different the treatment of the linen trade has been! It has never received any discouragement; and even up to 1829 (£300,000 were given in that year) large bounties have been voted to it on its exportation. Its home, however, is now in the North of Ireland; and the spacious Linen Hall at Dublin, formerly frequented by crowds of merchants from every corner of Europe, has now lost its former importance. Hopes are still entertained of its revival at Dublin. May it soon be so!

One of the most interesting stories connected with the trading history of this place, is that connected with the inland navigation. The great object was to connect the east and west coasts, and thus develope the trade between the towns on the banks of the Liffey and the Shannon. The first in importance was that called "The Grand Canal." The company was formed in 1765, and incorporated in 1772. It was opened at various times to different points, but finally completed to Shannon harbour in 1806—distance being sixty Irish miles, or seventy-nine miles, English. It commences on the south-west of the city, where are also extensive docks attached to it capable of holding hundreds of ships, with three graving docks, large stores, and spacious wharfs. This part of the works has entirely failed. The dimensions of the canal, other than the length, are 45 feet at the top, and 25 feet at the bottom in breadth; 6 feet in body of canal, and 5 feet on lock sills in depth. The locks are generally 70 feet long by 14 feet wide, and can pass boats in from 2½ to 5 minutes. The amount of capital expended has been about one and a half million.

But the operations of this company have been surpassed by a rival project, called "The Royal Canal," situated on the north-west of the city. It

began in consequence of a difference which one of the "Grand" directors had with his colleagues, in 1789. At that time there was a public body in existence, called "The Board of Inland Navigation," the patronage of which was sought and obtained for the new company. The Irish Parliament voted supplies, and high hopes were raised concerning it; but few of these hopes were realized. In the year 1810 it had been opened as far as Mullingar, and had cost £1,142,550. The revenue was only £15,024. Interest on debt amounted £49,624 10s., and towards which only £4,131 4s. 6d. was available. The Parliament was petitioned, the company was declared bankrupt, and the property vested in the creditors, the majority of whom were widows and orphans. To bolster it up, another grant of £200,000 was given by Parliament with the intention of completing it to Tarmonbarry, on the Shannon. It 1818 a new company was formed out of the old one, and which seemed to succeed better, for a dividend was declared, which, in 1836, reached 2¼ per cent., but fell again, in a few years, to 1¼; and then an agreement was made to hand it over to the Midland Great Western Railway Company, in whose hands it now remains. No less a sum than £1,421,954 18s. 1d. was expended in constructing the canal; but extensive defalcations were proved to have taken place in its early management. This scheme has been a sad episode in the history of Dublin's trade. The result probably will be better now, when the railway company has succeeded in building docks at the Dublin end of the canal, which, it is to be hoped, will not prove so abortive as those attached to its great rival, the "Grand Canal." There can be no doubt that, in connection with the steam traffic with Liverpool, Glasgow, the Bristol Channel, &c., a very large business may be developed at these docks, so long as the inland trade and consumption can be fostered. The new docks were opened by the Lord-Lieutenant and the Countess Spencer, on the 15th April last. They are called, in honour of the Viceroy, the "Spencer" docks, and are situated at the Northwall harbour. An address was presented by the directors, and in which they stated that "The new dock would contribute materially to the efficient working of the port of Dublin, by relieving the already over-crowded wharves of the city, likely to be still further crowded, by the largely increasing prosperity of this portion of Her Majesty's dominions."

There are four lines of railway now running from Dublin, the South Western and Northern systems of which will shortly be all connected together, and the above docks will, therefore, have the further facility of direct communication with them.

A few statistics will show the advancement of the place with more distinctness. Take, for instance, those relating to population, but which

are said to be of a vague character, by statisticians, previous to 1821. They are—

For 1644	8,159 persons.
,, 1777	137,208 ,,
,, 1804	172,042 ,,
,, 1821	186,276 ,,
,, 1831	254,155 ,,
,, 1841	232,726 ,,
,, 1851	254,850 ,,
,, 1861	254,808 ,,
,, 1871	245,722 ,,

The Poor Law valuation is given at—

For 1861	£545,846
,, 1871	573,502

The coasting trade, inwards, amounted to—

In 1849	5,721 vessels ...	658,398 tons.
,, 1861	7,648 ,, ...	1,099,978 ,,
,, 1871	7,286 ,, ...	1,299,644 ,,

The same trade, outwards, showed—

In 1849	3,053 vessels ...	457,526 tons.
,, 1861	4,069 ,, ...	781,782 ,,
,, 1871	3,745 ,, ...	992,126 ,,

The colonial trade, inwards, was—

In 1849	87 vessels ...	23,680 tons.
,, 1861	111 ,, ...	49,518 ,,
,, 1871	1 ,, ...	294 ,,

The same trade, outwards, displayed—

In 1849	55 vessels ...	15,751 tons.
,, 1861	84 ,, ...	36,614 ,,
,, 1871	1 ,, ...	294 ,,

The foreign trade, inwards, amounted to—

In 1849	405 vessels ...	67,131 tons.
,, 1861	467 ,, ...	105,993 ,,
,, 1871	516 ,, ...	182,025 ,,

The same trade, outwards, was—

In 1849	245 vessels ...	53,858 tons.
,, 1861	209 ,, ...	61,043 ,,
,, 1871	190 ,, ...	66,066 ,,

The ships registered were—

In 1846	... ...	451 vessels ...	41,531 tons.
,, 1849	... ...	475 ,, ...	42,566 ,,
,, 1861	... ...	553 ,, ...	47,697 ,,
,, 1871	... ...	523 ,, ...	57,334 ,,
,, 1872	... ...	527 ,, ...	57,602 ,,

The ships built were—

In 1871	... ...	2 vessels ...	384 tons.

Last year there were none launched.

The Customs' duties collected were—

In 1833	£654,754
,, 1840	857,447
,, 1848	980,289
,, 1858	1,018,225
,, 1870	878,464

The large amount of duties collected at Dublin places it as a first-class port in the Customs' list. The apparent decrease between the last two items given is principally accounted for in the large reduction which of late years have been made in the Customs' duties generally. The amounts collected on the various individual articles of principal value in the tariff, were, for 1870, as follows:—

On Tobacco	£432,996
,, Sugar	63,308
,, Tea	170,298
,, Foreign Spirits	96,800
,, Wines	106,822
,, Sundries	8,240
Total	£878,464

The principal imports are—Tea, wine, timber, colonial produce. After London and Glasgow, Dublin pays more duty on tea than any other port in the United Kingdom.

The exports consist of linen, woollens, cottons, eggs, hides, beer, flour, provisions, meal, corn, cattle, sheep, and hogs.

The manufactures, other than those specially treated, are—Glass, sailcloth, canvas, soap, starch, size, glue, paper, parchment, vellum, hats, snuff, &c. There are also foundries, breweries, distilleries, tanneries, coachbuilding works, &c.

The Bay of Dublin is one of the most picturesque in the world. Various schemes have, from time to time, been propounded to improve

the harbour accommodation, the most successful of which is that at Kingstown, which was commenced under authority of 55 and 56 George III. This was on the site of an old harbour called Dunleary. It now encloses about 200 acres, by means of two piers, and the major part of the steam-packet business is done there. The coasting steam-packet trade is very large, and forms a considerable share in those statistics given above. The regular service between Kingstown and Holyhead is one of the utmost regularity, despatch, and importance to the commercial interests on both sides of the Channel.

The Liffey, of late years, has also been much improved in its navigation by means of dredging, and the removal of the "bar," especially. It has quays of great extent, and their appearance on each side of the river give an air of grandeur to the city from that point of view which is very striking.

The buildings of a public character have given a special importance of their own. The Custom House, which is also for the use of various other Government departments, is of vast extent; it was founded in 1781. It is 375 feet long by 205 feet deep. It has four decorated fronts of the Doric order of architecture, with columns of Portland stone, and cost half a million. The Royal Exchange was commenced in 1769, and finished in 1779, and cost £60,000. The General Post Office, in Sackville Street, seems as if it were "meant to accommodate the business of all Europe." The hotels are, many of them, very large and imposing. The Bank of Ireland was begun in 1729, and not completed till 1787, and cost £95,000. All these imposing structures have combined to give Dublin a special attractiveness as a well-built city.

It only remains to be said that the fluctuations which have characterized its trade, do not appear to have lessened its population or material wealth. If the once flourishing manufactures had been allowed to remain undisturbed, the city might, certainly, have had a different status to-day; but it must also be conceded that, if the citizens had been possessed of the unflagging enterprise of the Glasgow merchants, who, when equally interfered with in their own particular trade, turned immediately to other branches of commerce, probably the Irish capital might now have presented a spectacle of commercial and manufacturing success equal to any other city, with like facilities in the United Kingdom.

NOTE.—In our next number we shall give a short account of two important bodies connected with navigation at Dublin, viz.: the Port of Dublin Corporation and the Commissioners of Irish Lights, which have accidentally been omitted in our present article.

CORRESPONDENCE.

CONSTANTINOPLE.—BRITISH LIBRARY, READING ROOMS, AND LECTURE HALL.

To the Editor of the Nautical Magazine.

SIR,—Finding myself at Constantinople, I, like other tourists, naturally, after my quarantine in the Bosphorus, sought immediately on coming ashore, for London newspapers and magazines, and as the result in my own case may be useful to some of your nautical readers coming this way, by-and-bye, I venture to mention it in your pages, *pro bono publico*, especially for sea-officers.

My *valet de place* first conducted me from Masson's Hotel to the British Post Office, and there I was obligingly informed that but a few yards off flourished an INSTITUTION where I should find, not only our old friend *Punch* and the *Illustrated News*, but the *Daily Telegraph*, *Standard*, *Malta Times*, &c., the *Nautical Magazine*, *Blackwood*, *Chambers' Journal*, and others, and a library of nearly three thousand volumes.

What a treat to a traveller just coming out of quarantine! This collection of "food for the mind" is due to the members of the *British Literary and Mechanics' Institution*, and is generously thrown open, gratuitously, to tourists, and masters and mates of vessels visiting these waters. Open daily from ten a.m., till ten p.m. (Sundays excepted), the stranger here is sure to meet with courteous reception, and exactly the local information he seeks. Among other matters, a collection of the best charts is now being made, a very useful move in the right direction, since the *latest* charts are seldom to be purchased in this polyglot city. I have failed to find even a "Purdy's Sailors' Directory," and, happening to mention this, one of the members assured me it should at once be ordered in London, and added, as a book of reference, to the library. On the walls of the large reading room I noticed a long list of lectures given during the last two years by the members (of whom there are some 200 English subscribing); and I was informed that from the coming 1st of October to the end of April, lectures will be delivered every Wednesday evening, from eight to ten p.m. Such being the advantages open to the traveller, and, seeing that in your April number you notice (at page 315) the meetings of *Societies*, I venture to enclose a few of the subjects already entered for the coming season, for which I am indebted to the chairman for the present year, Mr. Knight, the leader of the Constantinople bar, who, strangely enough, was a contributor many years ago, in the time of Captain Becher, to the *Nautical*

Magazine, under the *non de plume* of MAHMOUZ EFFENDI* The lecture list, from Wednesday, 1st October, 1873, already stands as subjoined.

Your obedient servant,

A LIVERPOOL REPORTER FROM VIENNA.

Lecture List, 1873.—First Part.—"A Century Ago," Mr. Mainwaring, Secretary; "A Century Hence," Mr. Haddan, C.E.; "Siege of Gibraltar," Mr. Knight, barrister-at-law; "Siege of Malta," Dr. Mizzi, barrister-at-law; "Origin of English Institutions," Mr. Pears, barrister-at-law; "Recollections of the Pacific," Mr. Outridge; "Opposition to Science and Discovery," Mr. W. Kerr; "Hamlet and Henry IV.," Mr. Kerr; "Old England—Present and Future," Mr. Macgill; "Physiology," Dr. Patterson; "Geology of the Bosphorus," Rev. Mr. Washburn; "Siege of Rhodes," Mr. Mainwaring; "Conquest of Constantinople," Rev. Mr. Millingen; "Vienna Exhibition," Mr. J. Millingen.

MERCHANT SEAMEN.

To the Editor of the Nautical Magazine.

Queenstown, August 13, 1873.

SIR,—For some considerable time, lately, much has been said, and a great deal written, about the enormous loss of life at sea, caused principally, it is said, by the overloading of vessels. Now this is, in a measure, true, but not to the extent which some individuals would lead us to believe; there must, therefore, be another cause, and one which has been too much overlooked. It is well known to those at all connected with shipping, that as soon as a vessel arrives in any port, in either the United States or British North America, she is immediately surrounded and boarded by a low set of crimps, boarding-house runners, and vagabonds, with no other intention than to allure the crew on shore, which, unfortunately, they too often succeed in doing; the consequence is, that other labour has to be found, for which the master pays smartly; but this is not all, before the vessel can go to sea again, another crew must be obtained, and a shipping master is commissioned to engage a crew, which he does, and when the vessel is ready, but not until then, the crew are put on board, most of them incapable through drink. This was the case with my vessel when leaving Philadelphia. These men had signed articles for thirty dollars a month, and a month's advance, the

* Mr. Knight has also written an "English and Turkish Vocabulary," a "Diary in the Dardanelles," "Oriental Outlines," and other works on the East.

bulk of which the boarding-master puts in his pocket, although the probability is the seaman does not owe him one-half; in fact, I know that some of the men had only been two days ashore. After we got away, I soon found out what sort of a crew I had got. Out of eight able seamen, only two could steer, and that very indifferently; the others had never been at a ship's helm before, and knew as much about it as the man in the moon. They could not even furl a top gallantsail or gaff topsail. Now, I ask anyone what chance has a ship with a crew of this description, especially in bad weather, crossing the Atlantic, in winter time, and yet it is common enough. Mine was no isolated case; fortunately with me it was summer time, but it makes matters much worse when the vessel is a sailing ship, and a great deal depends upon the sails, and how they are handled. Such cases as this I have no doubt have been the cause of many a good ship going to the bottom, with all hands, and then the blame has been attributed to overloading, heavy deckloads, &c., whereas if a competent crew had been on board, the vessel would have, no doubt, arrived home in safety. This, then, is one cause of so many losses, and as long as the system is carried on, it will be so. The system is rotten at the core, and a disgrace to a civilized nation, and only wants to be looked into, and a remedy applied.

I remain, Sir, yours respectfully,

GEO. C. COATES,

Master S.S. *Artos*.

CUXHAVEN.

(From our Special Correspondent.)

In the July number of the *Nautical Magazine*, I find, under the head "Port of Cuxhaven," the following statement:—"The Company for creating a port at Cuxhaven asks from the State of Hamburg a subsidy of 60,000 florins for twenty years, a gratuitous grant of all Government land required for the works, and to be guaranteed the acquisition by purchase, of whatever private property may be found necessary, and it seems probable that these terms will be conceded. Although a project of this kind was mooted so far back as 1853, jealousy on the part of the inhabitants of Hamburg has hitherto prevented its being carried into execution, as it was feared that a port at Cuxhaven would be injurious to the trade of the Elbe. This feeling still exists, and, judging from the remarks of the *Hansa*, the concession above indicated will only now be made because it has become apparent, that, if the State of Hamburg does not countenance this scheme, a somewhat similar one

will be executed by a company supported by Prussia, in which case the trade of Hamburg would be most seriously injured, as every effort would be made to carry the traffic from Cuxhaven straight into the heart of Germany. For it is well known that Prussia is at present endeavouring to develope her maritime power."

This statement is not in conformity with the facts of the case. It is correct that a project of this kind was mooted so far back as 1853, but not jealousy on the part of the inhabitants of Hamburg has hitherto prevented its being carried out. In 1853, on the advice of several eminent engineers, amongst them the celebrated English engineer, Mr. Rendel, it was considered expedient, in the first instance, to continue with greater efficiency the deepening of the river Elbe up to Hamburg, and merely to construct the necessary works for protecting and extending the comparatively small port at Cuxhaven. In 1853, owing to the opposition of the then Hanoverian Government, it was impossible for the State of Hamburg to connect Hamburg and Cuxhaven by railroad, and, without railway communication, a large port at Cuxhaven, especially in winter, when the river is frozen up, would have been but of little use.

The dredging of the navigable channel of the Elbe has, since 1853, been continued at a yearly cost of about £25,000, and been so far successful that vessels with 19 feet draught of water can now come up to Hamburg.

It may be possible that a feeling of jealousy against Cuxhaven is entertained by some few persons at Hamburg who have narrow views, but such a narrow feeling has never prevailed with the Government and the enlightened public opinion; on the contrary, the scheme for creating a port at Cuxhaven, suitable for the reception of large vessels, has received the best support of the Hamburg State. The terms asked by the company (gratuitous grant of all Government land, acquisition of private property, &c.) seem not only likely to be conceded, for they have already last year been granted to the fullest extent, and the yearly subsidy of 60,000 dols. (about £9,000) will be voted by the Burgerschaft as soon as the works are complete. In consequence of such concession the company have commenced their operations, and are at present in full work.

It is, therefore, not correct to say, "That it seems probable that the terms asked for will be conceded, and that if the State of Hamburg does not countenance the scheme a somewhat similar one will be executed on Prussian territory, supported by the Prussian Government;" and I should feel obliged if you will give this explanation in the next number of the *Nautical Magazine* as coming from a good source.

Hamburg, July, 1873. * * *

COMMISSION FOR LIGHTING THE NORTH SEA AND BALTIC COASTS.

(From our Special Correspondent.)

With regard to the further statement in the *Nautical Magazine*, that a Commission has recently (in the month of November, 1872) been sitting at Berlin to consider the question of the lighting of the North Sea and Baltic coasts, I beg to observe that the Commission consisted of Commissioners from Prussia, Oldenburg, Bremen, and Hamburg (I had the honor to be one of the Hamburg Commissioners), and that only the question of the lighting of the German North Sea coasts from Holland up to Jütland has been considered. The following resolutions were come to:—

1. *Borkum Island.*—(*a*) To place on the tower there a revolving light of the first order (Fresnel); every two minutes. Visible 18 miles. (*b*) To station a lightvessel on Borkum Riff, 16 miles from the Borkum lighthouse, lat. 53° 50′ N., long. 6° 27′ E.; in 14 fathoms water, showing three fixed lights, the middle one red. Visible 8 miles.

2. *Norderney.*—To erect a lighthouse, showing an intermitting light of the first order (Fresnel) every ten seconds. Visible 20 miles.

3. *Wangerog.*—To place on the tower there a revolving light of the second order (Fresnel), with a white and red flash alternatively every minute. Visible 16 miles.

4. To station a lightvessel on the entrance of the *Jade* and *Weser* about 4 miles N.W. from the Key buoy; lat. 53° 54′ N., long. 7° 49′ E., in 13 fathoms water, showing three fixed white lights. Visible 8 miles.

5. *Amrum Island.*—(*a*) To erect a tower with a revolving light of the first order (Fresnel), showing a flash every six seconds. Visible about 20 miles. (*b*) To station a lightvessel near Amrum Riff, lat. 54° 36′ N., long. 8° 4′ E., in 6 fathoms water, showing two white fixed lights. Visible 8 miles.

The other lights on the German coast from the Dutch lights of Ferschelling and Schiermounikoog up to the Danish coast remain unaltered, but a *large buoy*, with three balloons, marking the entrance to the dangerous *Wester-Till* has been placed by the Hamburg Government at a distance of 7½ miles from the Outer Elbe lightvessel; lat. 53° 58′ N., long. 8° 6′ E., in 13 fathoms water. In clear weather this buoy is visible 8 miles.

Hamburg, July, 1873. * * *

In answer to our Liverpool correspondent, "Verax," we beg to inform him that, on making inquiry, we learn that the continuance of Captain Burdwood's Sun's True Bearing, or Azimuth Tables, between 30 degrees and the equator, is now in course of compilation, and will shortly be in the press. We agree with our correspondent that such a work is much wanted, and are glad to be able to record its probable early appearance.

ON CORAL ISLANDS AND THEIR ARCHITECTS.

PROFESSOR ALLMAN, F.R.S., recently read a paper at the Royal Institution on this subject, of which paper, by the consent of the Council of the Institution, we give the following abridgement:—

"The speaker commenced by giving an account of the structure and habits of the *Actinia*, or sea-anemone, as a type of the coral polype. He described it as a fleshy sac, attached by a broad base at one end, and having at the opposite end a mouth surrounded by a wreath of tentacles or feelers. He showed that its stomach consists of a smaller sac suspended in the larger, and opening at one end by the mouth, while at the other end it opens into the surrounding cavity of the larger sac. This free opening of the stomach into the general cavity of the body is a character of great importance, and is possessed by no other group of animals than that to which the sea-anemone belongs.

"The group so constituted is named *Cœlenterata*, a designation derived from the Greek, and intended to express the peculiarity of structure here referred to. This curious open stomach is kept in its place by a set of vertical fleshy plates, which radiate from it to the surrounding walls of the great cavity of the body. Now, the various parts of the sea-anemone are under the control of a definite number, by which its symmetry is regulated. This is the number six; and the radiating plates just mentioned are thus either six in number or some multiple of six, and so also the tentacles, when freely and normally developed, are either six or one of the multiples.

"The speaker then pointed out how *Caryophyllia*, which may be found upon various parts of our own shores attached to rocks at low spring-tides, and which essentially agrees in structure with the sea-anemone, has the power of separating carbonate of lime from the sea-water and of depositing this mineral, particle by particle, in its tissues, so as to become in great part calcified. In other words, how it has the power of forming a true skeleton of coral.

"Having given an account of the nature of the coral animal and its mode of forming coral, the speaker proceeded to describe the home of the reef-builders. This region forms an irregular zone, extending for some distance at each side of the equator, but never going further from it than about 30° of latitude.

"The extent of the coral formations within this area has ever since the seas began to be explored struck the navigator with astonishment. Along the western coast of New Caledonia is a reef of 400 miles in length, and along the north-east coast of Australia is one of more than 1,200.

miles; while it is to the labours of the reef-building polypes that almost all the beautiful islands which stud the tropical portion of the Pacific, and many of those in the Indian Ocean, are mainly due.

"The speaker then drew a picture of the aspect of the ocean, and of the most striking members of its fauna in the region of coral reefs. He directed especial attention to the most superficial zone of the tropical ocean—that zone where sea and air and heat and light combine and concentrate the conditions of intensest animality, amid which becomes developed a most beautiful and marvellous fauna; where Medusæ and Siphonophores wander at their own wild will, propelled through the clear waters by the pulsations of crystal bell or of broad many-coloured disc, or in vast fleets are floating over the sea with sail extended to the breeze; where Pteropods flit on wings through the water like butterflies through the air; where Beroes catch the sunlight on their sides and flash it back in all the brightest hues of the rainbow; where Salpæ play in long undulating chains of crystal, and Pyrosoma, no less clear and crystal-like by day, becomes a cylinder of fire by night. What exuberance of life! What intensity of happiness! What unnumbered hosts basking beneath the tropic sky, or breaking the mirror of the sea with their gambols, or yielding to the impulse of the gentle trade-wind, or lighting up at night with phosphorescent gleam the dark waters of the deep!

"Now, the coral-builders share with these bright and active hosts the prolific surface zone of the ocean. But their area is also a deeper one, and for many a fathom downwards their flower-like discs and banks of living coral may be traced by the sounding-lead and the dredge.

"This extension downwards, however, is limited to a depth of from twenty to thirty fathoms, and no living reef-building coral is ever found at a greater depth than this.

"Having examined the workers and their home, the speaker proceeded to consider the nature of their works, and this subject would be best treated under the following heads:—

"1. The forms and structure of the reefs.

"2. The mode of their construction.

"3. Their relations to man.

"The Forms and Structure of Coral Reefs.

"Coral formations have been divided into three classes: the atoll, or lagoon island, the barrier reef, and the fringing reef.

"The atoll is the type of the coral island. It presents the appearance of a circular or irregularly formed ring of coral rising out of the bosom of the ocean, generally clothed with a rich tropical vegetation of cocoanut palms, pandanus, and pisonia, surrounded by a reef of white

foam where the sea breaks upon its outer margin, and having a lagoon or lake of still water in the interior.

"The barrier reef consists of a ridge of coral, resembling that of an Atoll, but running parallel to the shores of a continent, or surrounding those of an ordinary island, and in either case at such a distance as to include between it and the land a deep channel of still water.

"A fringing reef differs from a barrier reef only in being smaller, and scarcely including any channel between it and the land, which it thus merely fringes with a skirt of coral rock.

"Mode of Formation of Reefs.

"For the beautiful theory of the formation of coral reefs, which is now universally accepted—the only one, indeed, which is consistent with all the known phenomena, and one of the most important with which the physical history of the earth has of late years been enriched, we are indebted to Mr. Darwin.

"The theory of Darwin is founded on two incontestable facts,—the one purely physiological, the other purely physical.

"The physiological element in the theory of Darwin consists in the fact already insisted on, that the coral animals cannot live at unlimited depths.

"The physical element in the theory is this: That while the ocean maintains the same level, from age to age, all over the world, the solid land is subject to repeated oscillations of level, rising in one place, and sinking in another, and this sometimes to an extent of many thousands of feet.

"Having demonstrated the reality of this phenomenon by reference to numerous well known geological facts, the speaker proceeded, with the aid of diagrams, to apply the two groups of phenomena to the explanation of coral formations.

"He showed how a mountain, rising out of the sea, in the form of a precipitous island, in the region of the reef-builders, will present on its shores the conditions suited to the coral polypes, which will there attach themselves, building downwards until they arrive at depths too great for the perfect exercise of their functions, and upwards until the surface of the sea sets bounds to the further elevation of their structures. A reef of coral will thus be spread all round the shores of the island, and will constitute the formation known as a fringing reef.

"But the island is supposed to be in a region of subsidence, and has begun to sink slowly into the sea, carrying with it the already-formed fringe of coral into depths incompatible with the well-being of the polypes. Urged, however, by an unerring instinct, the reef-builders continue their labours upwards simultaneously with the gradual depression of the land, and thus the reef is always extending itself towards the warm sunlit

surface of the sea, where all the conditions of coral life exist, while the lower parts have passed downwards into depths where the formers of coral must cease to live.

"The reef has thus grown larger; and as the coral is produced in greater force on the outer edge, where the reef is exposed to the open ocean, with all the conditions in which the animals forming it delight, this part is sooner brought to the surface than the inner part, where the growth of the coral is still further interfered with by the accumulation of fragments which the waves tear from the reef, break down into coral sand and coral mud, and carry inwards towards the land. A deep channel is thus formed between the outer part of the reef and the shores round which the coral has attached itself; and what was at first a fringing reef, becomes in this way converted into a barrier reef.

"In the meantime, fragments of coral broken off by the waves are gradually piled upon the upper surface of the reef, which is thus in time raised above the sea in the form of a long stretch of dry land, separated from what still remains of the original island by the intervening channel of still water, and capable in the course of time of affording, by the decomposition of its surface, a soil in which terrestrial plants may take root.

"But the changes do not end with the formation of a barrier reef; for the work of subsidence goes on, and the ancient land continues to sink deeper and deeper into the sea, carrying the coral polypes down with it into the dark, ungenial ocean depths, where they must inevitably perish. And now at last the highest point has disappeared, all has sunk beneath the sea, and a wide waste of landless waters rolls unbroken over its summit.

"The island architects are not, however, to be baffled. As the lower parts of the reef sink into depths, where they must perish, the upper parts are simultaneously extending themselves as a bank of living coral toward the surface, which at last they reach in the form of a more or less circular reef, on which the waves once more break, and which includes within it a sheltered lagoon, now free from even the last remnant of included land; and the barrier reef becomes thus converted into an atoll.

"Now it will be here noted that throughout the whole of the changes which have been thus traced, the thickness of the bed of living coral is a constant quantity, extending always from a little below the surface of the sea to that fixed plane beyond which, if the coral be carried, it ceases to live, while, on the other hand, the mass of dead coral is continually increasing with the subsidence of the land.

"It is also evident from what has now been said that the atoll points out the spot where an ordinary island had become submerged, and

that the whole region of atolls and barrier reefs has been gradually subsiding. A subject of great significance is thus suggested by the study of the phenomena of coral reefs; and the conclusion is irresistibly forced upon us, that in the region where now the Pacific Ocean separates the Old World from the New, there lay in former times a continent with its mountain peaks and table-lands; that all has since sunk beneath the sea, except its highest table-lands and the summits of its highest mountains; that within the region of the reef-builders the coral has gathered in its encircling reefs round these last remnants of the ancient land; while an atoll marks the spot where a mountain peak of that old continent has totally disappeared beneath the ocean.

"In those regions which lie beyond the warmer area of the coral, the land may yet have sunk and left no sign; for the reef-builders could not live in the colder waters, and there was nothing else to tell the tale.

"THE CORAL ISLAND IN ITS RELATIONS TO MAN.

"But the atoll, whose formation we have been following, is not yet dry land. It is still a submerged reef over which the waves roll, for the polypes cannot extend their works into the upper air. Further changes therefore still await it. Fragments torn from its outer side by the waves are piled upon its surface, and it rises higher and higher from the sea; the decomposing coral covers the reef with a fertile soil, to which the wind and the ocean currents may bring the seeds of plants from other lands, and a graceful vegetation clothes in time its sea-girt shores.

"And thus the atoll becomes fitted for the sustenance of terrestrial animals and man. Sea-birds in multitudes find shelter there, and land-birds from distant shores see in it a country where they may dwell; while the drifted trunk of the forest-tree, to which the lizard and the insect still cling, is cast upon its strand to begin the peopling of its woods with still other forms of life.

"Some large fruit-eating bats too have discovered it; but no other mammal has ever formed part of the aboriginal fauna of the coral island.

"Its latest occupant is doubtless man; but whence he came; from what original stock he migrated, we have no positive evidence to determine.

"If we except the Feejee group and some of the other high coral-encircled islands which lie at the extreme west of the area, and in which the inhabitants are Negrittos, characterised by their black skins, frizzled hair, and repulsive features, we shall find a great uniformity of type to prevail over the rest of the Pacific coral region, a type with lighter skin and straight or wavy hair, and one which points towards an affinity

with the Malay races of south-eastern Asia. We are not, however, on this account to suppose that the islands were necessarily peopled by direct migration from the Asiatic shores. If we suppose that the high islands, with their encircling barrier reefs, represent the last remnant of a submerged continent, it is quite possible that these islands may have retained the last remnant also of its population. But, whether this be so or not, it is certain that the atolls must have been independently peopled, either from the surrounding islands or from some more distant Continent. The atoll rose from the bosom of the ocean destitute of terrestrial life, and many a century must have passed before the presence of man broke the solitude of its shores. We may well believe that at last some savages, drifted out of their course by adverse winds, had run their canoe upon the strand and had taken possession of the land of the polype.

"Years pass on, and the descendants of the first accidental settlers have peopled the island; but, though experience may have taught them many things, though an imperfect division of labour may have been adopted, and a rude state of society established, the aboriginal dwellers have rather adapted themselves to the physical conditions among which they have been thrown than raised themselves above them, and centuries pass away and leave them little changed. For, after all, the coral island is but ill-fitted for human development.

"And so centuries roll on, until, at last, from these other shores the destined race has landed on the island—a race with higher powers, a more cultivated intellect, and an increased capacity for improvement —the bearer of a new force, of a civilization with all its good, and, alas! with all its evils too. But the good is greater than the evil, and so the lower yields to the higher phase of intellect, more perfect social relations are introduced, laws are instituted, the savage rites of a degrading superstition give place to a more elevated and a purer creed: no longer with that narrow policy which does not look beyond the limits of its own strand of coral, a common interest has united island to island, and a national life has dawned upon the archipelago of the polype; deficiencies are supplemented by the products of other lands; the breadfruit, and the banana, and the yam are cultivated; the fruits of the woods and the pearl-shell and the trepang of the lagoons are sought after by the trader; the relations of commerce are established, and the coral island takes its place in the great community of nations.

MONTHLY ABSTRACT OF NAUTICAL NOTICES.

No.	Place.	Subject.
156	Africa—South Coast—Algoa Bay- Bird Islands	Alteration in Light.
157	Canada—St. Lawrence River—Windmill Point	Establishment of a Light.
158	United States—Massachusetts—Cape Cod	Establishment of a Fog Signal.
159	United States—Massachusetts—Race Point	Establishment of a Fog Signal.
160	England—East Coast—Medway River	Alteration in position of Buoys.
161	Norway—South Coast—Lister Light	Alteration in Light.
162	Scotland — West Coast—Clyde Firth — Turnberry Point	Establishment of a Light.
163	Adriatic—Brindisi Harbour .	Position of Rock.
164	Adriatic—Morter Canal—Stretto	Establishment of Harbour Light.
165	Adriatic—Port Spalatro—St. Stefano Point	Temporary Light.
166	Sardinia—Asinara Gulf	Position of Sunken Rock.
167	Grecian Archipelago—Syra	Temporary discontinuance of Light.
168	England—East Coast—Lowestoft High Light	Intended alteration in character of Light.
169	Brazil—Itapuan Point	Intended Establishment of a Light.
170	Nova Scotia—Shelburne Harbour	Establishment of a Light.
171	Gulf of St. Lawrence—Miramichi Bay	Establishment of a Lightvessel.
172	Nova Scotia—Port Mouton	Establishment of a Light.
173	Gulf of St. Lawrence—Magdalen Islands	Establishment of a Buoy.
174	United States—Long Island Sound—New York—Stratford Shoal Lightvessel	Alteration during repairs.
175	United States—Oregon—Cape Foulweather—(Yaquina Head)	Establishment of a Light.
176	United States — Rhode Island — Musclebed Shoals	Establishment of Beacon Light and Fog Signal.
177	United States—New York—Fort Lafayette	Establishment of a Fog Signal.

NAUTICAL NOTICES.

156.—Africa.—*South Coast.—Algoa Bay.—Bird Islands.*—The following alteration has been made in the light on these islands—viz., the light is now a *fixed red* light of the third order, 80 feet above the sea, and should be seen about 10 miles. The tower is 72 feet high, and is stone coloured.

Directions.—Vessels passing between the islands and the main are recommended to keep nearer the main land than the group, as the land is more readily discerned, and the break of the surf more distinctly heard. The lead also should be kept going. In passing outside the group, vessels should not approach within 3 miles of the lighthouse, as

the force and strength of the current are uncertain and irregular. The old light tower will be removed.

157.—CANADA.—*St. Lawrence River.—Windmill Point.*—The stone tower on this point, situated 1¼ miles above Fort Wellington, Prescott, has been converted into a lighthouse, from which a light is now exhibited. The light is a *fixed* white light, 92 feet above the river, and should be seen 15 miles. The tower is round, and 62 feet high. Position, lat. 44° 46′ 20″ N., long. 75° 28′ 40″ W.

158.—UNITED STATES.—*Massachusetts.—Cape Cod.*—A first class Daboll trumpet has been established as a fog-signal at Cape Cod highlands lighthouse, which in thick or foggy weather will sound blasts of *eight seconds* duration, with intervals of *thirty seconds* between them.

159.—UNITED STATES.—*Massachusetts.—Race Point.*—A steam-whistle has been established at Race Point lighthouse, Cape Cod, which in thick or foggy weather will give two blasts of *four seconds* duration each, with an interval of *eight seconds* between them, followed by an interval of *forty-four seconds.*

160.—ENGLAND.—*East Coast.—River Medway.*—In consequence of the extension of the Sheerness Middle sand to the eastward, the positions of the buoys at the entrance of the river have been altered—viz. :—

Sheerness Middle buoy, has been moved E. ½ S., 3½ cables, and now lies in 20 feet at low water springs, with the following marks and bearings—viz. :—

Martello tower, half its width open northward of the Turf battery on the Isle of Grain	W. ¼ S.
The tower of Victoria hall, in line with Miletown mill	S.W. by W.
Garrison point	W. by S. (southerly).
Nore light-vessel	N.E. by E. ¾ E., 8½ cables.

Cant Edge buoy has been moved, and now lies in 21 feet at low water springs, with the following bearings, viz. :—

Black and white beacons in line	West.
Dock Yard church	W.S.W.
Minster church	S. ¼ E.

161.—NORWAY.—*South Coast.—Lister Light.*—In accordance with Notice, No. 41 (February number), the alteration in this light has been made, and is now one *flashing* light, showing a flash *every four seconds.*

162.—SCOTLAND.—*West Coast.—Firth of Clyde.—Turnberry Point.*—A *flashing* white light is now exhibited on Turnberry Point, on the Ayr coast. It will show a flash *every twelve seconds.* It is elevated 96 feet above high water, and should be seen 15 miles. The tower is 64 feet high, and built of white bricks. Position, lat. 55° 19½′ N., long. 4° 50¼′ W.

163.—ADRIATIC.—*Brindisi Harbour.*—The following particulars respecting the rock in Brindisi harbour has been received:—The rock, which is about 30 feet across the top and steep to, has 19 feet on it. From it, Traversa lighthouse bears N.E. by E. ¾ E., distant 8 cables, and Castello island mole lighthouse N.W. ¾ W., 4 cables.

164.—ADRIATIC.—*Morter Canal.*—A *fixed* white light, elevated 20 feet above the sea, is now exhibited from a lamp-post on one of the projecting buttresses of the *swing* bridge at Stretto, Canale di Morter. It should be seen 2 miles.

165.—ADRIATIC.—*Port Spalatro.*—*St. Stefano Point.*—A temporary *fixed* white light, 20 feet above the sea, and visible 3 miles, is now exhibited from a post 25 yards from the extremity of St. Stefano point, to mark the position of the jetty now in the course of construction.

166.—SARDINIA.—*Asinara Gulf.*—Information has been received of the existence of a sunken rock in this gulf near Asinara island, on which the steam vessel *La Ville de Nice* struck. The rock (*Nice rock*) lies E. ⅓ S., distant 2 miles from the tower on Point Trabucato, Asinara island. This bearing and distance places the rock in lat. 41° 4′ 30″, long. 8° 21′ 30″.

167.—GRECIAN ARCHIPELAGO.—*Syra.*—The exhibition of the light of Syra has been temporarily discontinued in consequence of an alteration being made in the illuminating apparatus.

168.—ENGLAND.—*East Coast.*—*Lowestoft High Light.*—The Trinity House have given notice, that about the month of November this light will be changed from a fixed to a *revolving* light, showing a flash at intervals of *thirty seconds.*

169.—BRAZIL.—*Itapuan Point.*—A *fixed white* light will in a short time be exhibited on this point in lat. 12° 58′ S., long. 38° 21′ W.

170.—NOVA SCOTIA.—*Shelburne Harbour.*—A *fixed red* light is now exhibited on Sand point, east side of the harbour. It is 67 feet above high water, and visible 11 miles. The tower is a square wooden building, 20 feet high, and painted white. Position, lat. 43° 41′ N., long. 65° 19′ W.

171.—GULF OF ST. LAWRENCE.—*Miramichi Bay.*—A lightvessel has been placed on the Inner Horse Shoe bar, between Fox and Portage islands. The light is a *fixed red* light, 35 feet above the sea, and will probably be seen 8 miles. The light vessel is schooner rigged. Position, lat. 47° 8′ N., long. 65° 3′ W.

172.—NOVA SCOTIA.—*Port Mouton.*—A *fixed red* light is now exhibited on the north point of Spectacle island, 47 feet above the sea, and is visible 11 miles. The tower is square, and painted white. Position, lat. 43° 55′ N., long. 64° 48′ W.

173.—Gulf of St. Lawrence.—*Magdalen Islands.*—A *red* buoy has been placed in 5 fathoms off the north-east end of Sandy Hook shoal. Vessels running into Pleasant bay for shelter, through the Sandy Hook channel, between Entry and Amherst islands, should pass to the north-east of the buoy, as the shoal is steep, and the current sets strongly over it.

174.—United States.—*Long Island Sound.—New York.*—The Stratford point lightvessel has been removed for repairs, and her place supplied by a vessel painted black, with white streak, exhibiting two lights, one on each mast.

175.—United States.—*Oregon.—Cape Foulweather (Yaquina Head).*—A first order *fixed white* light is now exhibited 150 feet above the sea, and should be seen 18 miles. The tower is 81 feet high, and painted white. Position, 44° 43½′ N., long. 124° 5′ W.

176.—United States.—*Rhode Island.—Musclebed Shoals.*—A sixth order *fixed red* light is now exhibited from the beacon on these shoals, on the south-east side of the Channel, Bristol ferry. It is 28 feet above the sea, and should be seen 10 miles. In thick or foggy weather a bell will be struck by machinery once *every twenty seconds.*

177.—United States.—*New York Bay.—Fort Lafayette.*—A fog-bell has been established near the S.W. corner of the sea-wall of the fort. In thick or foggy weather it will be struck one and two blows alternately, with intervals of *twenty seconds.*

Board of Trade Surveyors as Witnesses.—We have, as requested by a correspondent, made inquiries at the Board of Trade on this subject, and have been informed to the following effect—viz.:—"That the Board absolutely forbid their surveyors giving any information or making any statement to third parties respecting facts that have come to their knowledge in the performance of their official duties; but that if, in any case, parties to a lawsuit serve, or undertake to serve, any surveyor with a subpœna and the Board of Trade are informed thereof, the Board of Trade will instruct that surveyor to make a statement if called on by the legal gentlemen employed in the case." The wisdom of the Board's rule must be apparent to everyone. Surveyors, owing to their official powers and position, often obtain information so important that it should only be imparted by them under seal to the Department, and it would be little less than scandalous for any surveyor to inform a third party of damaging facts or of confidential information that have come to that surveyor's knowledge in the performance of his almost judicial duties.

OUR OFFICIAL LOG.

LIST OF VESSELS WHOSE NAMES HAVE BEEN CHANGED.—*James Methuen*, of Leith, to *Water Bird*, of West Hartlepool; *Dilkoosh*, of London, to *Inveravon*, of London.

NAVAL COURT ENQUIRIES.

24. *Bonny.* On the 30th June, 1873, a Naval Court was held at Madeira, under the Presidency of H.M. Consul, to enquire into a charge of disobedience preferred against a seaman of the *Bonny*. He was sentenced to four weeks' imprisonment.

25. *Snap.* On the 14th April, 1873, a Naval Court was held at Nagasaki, under the Presidency of H.B.M. Consul, to enquire into a charge of drunkenness and desertion preferred against the master of the *Snap*. He was dismissed the ship, his provisional certificate was cancelled, and he was ordered to pay all costs.

26. *Danube.* On the 21st July, 1873, a Naval Court was held at Genoa, under the Presidency of H.B.M. Consul, to enquire into a charge of assault preferred against a seaman of the *Danube*. He was sentenced to four weeks' imprisonment.

27. *Springbok.* On the 11th March, 1873, a Naval Court was held at Somerset, Cape York, under the Presidency of Lieutenant F. Hayter, of H.M.S. *Basilisk*, to enquire into a charge of mental incapacity preferred against the master of the *Springbok*. His certificate was suspended during pleasure of the Board of Trade.

LOCAL MARINE BOARD ENQUIRIES.

10. *Islay.* On the 29th July, 1873, an enquiry was held before the Local Marine Board, Liverpool, into a charge of misconduct and incompetency preferred against the chief engineer of the *Islay*. He was reprimanded, but had his certificate restored.

12. *Roebuck.* On the 1st August, 1873, an enquiry was held before the Local Marine Board, Liverpool, into a charge of drunkenness and mismanagement preferred against the master of the *Roebuck*. His certificate was cancelled, but it was recommended that a first mate's certificate be allowed him.

BOARD OF TRADE INQUIRIES AT HOME.

83. *Staffordshire*, of Liverpool, abandonded 25th January, in lat. 47° N., long. 15° W. Inquiry ordered 6th March, but subsequently abandoned.

108. *Margaret*, of Perth, stranded on Scroby Sand, 29th April. Inquiry ordered 9th May, and held at Yarmouth, 22nd May, before Charles Wolverton, Esq., J.P., and John Fenn, Esq., J.P., with Captain Hight as nautical assessor. Court considered the casualty was attributable to the gross carelessness and negligence of the master (F. Salter). He held no certificate.

120. *Isabella Sarah*, of Newcastle, abandoned 5th January, in lat. 55° 26′ N., long. 8° 3′ E. Proceedings pending.

125. *John Cock*, of Middlesborough, stranded off Saltfleet, 4th November, 1872. Inquiry ordered 6th June, but subsequently abandoned.

121. *Friends*, of Whitby, stranded off Oland's Lighthouse, 10th April. Inquiry ordered 5th June, and held at South Shields 21st July, before T. Glover, Esq., J.P., and J. Broughton, Esq., J.P., with Captains Hight and Steele as nautical assessors. Court was of opinion that the *Friends* was steered unnecessarily near the shoal off the south end of Oland; but considering the master's prompt and successful action in extricating the ship, as well as his high character, suspended his certificate for three months only, from 1st July.

126. *Emily Burnyeat*, stranded at Porcrassa Bay, 23rd March, but subsequently abandoned, as the vessel was not materially damaged.

127. *Repealer*, of Newry, foundered off the Rock a Bill lighthouse, 25th May. Inquiry ordered 16th June, and held at Newry, 19th and 21st July, before F. Erskine, Esq., J.P., and J. O'Hagan, Esq., J.P., with Captains White and Oates as nautical assessors. Court considered vessel to have been unseaworthy on commencing her last voyage, and with the owner's knowledge. Master acted imprudently in leaving Belfast Lough when his vessel made so much water. He held no certificate.

129. *Volunteer*, of Shoreham, abandoned in the North Sea, 13th November, 1872. Inquiry ordered 19th June. Proceedings pending.

133. *Biafra*, of Teignmouth, stranded about two cables' length from Ramsgate Pier, 7th June. Inquiry ordered 24th June.

136. *Yarborough* and *Odessa*, came into collision 6th June, off Spurn. Inquiry ordered 25th June. Proceedings pending.

137. *Sunshine*, of Liverpool, given up as lost between that port and Nova Scotia. Inquiry ordered 28th June, but subsequently abandoned.

138. *Patrician*, of Newcastle, abandoned; date and place unknown. Found 20th November, 1872. Inquiry ordered 1st July. Proceedings pending.

140. *Emma Little*, of Rochester, foundered 12th June, off Cape Grisney. Inquiry ordered 1st July, and held at Rochester, 18th July, before James Hulkes, Esq., J.P., and T. H. Baker, Esq., J.P., with Commanders Forster and Knox, as nautical assessors. The ship was

uninsured, and there was no evidence produced to explain her loss on a fine day with a smooth sea. Master's certificate of service returned.

141. *Esperia*, of London, stranded 13th June, on Mugie Rocks. Inquiry ordered 1st July, and held at Peterhead, 15th and 16th July, before J. C. Thomson, Esq., J.P., John Smith, Esq., J.P., and William Leslie, Esq., J.P., with Commander Lillingston, R.N., and Captain Steele as nautical assessors. Court considered the master committed an error of judgment in not anchoring his ship when he found the wind so variable, but returned his certificate. Captain Steele did not concur, as he thought the master should have been punished for gross imprudence.

142. *Mermaid*, of Grimsby, stranded 31st May on Aldborough Beach. Inquiry ordered 1st July, and held at Grimsby, 29th July, before James Reed, Esq., J.P., and John Skelton, Esq., J.P., with Captains Hight and Wilson as nautical assessors. Court exonerated the master, but condemned the practice of allowing any men who happened to be on watch to act as they please without consulting the master.

143. *Bridemaid*, of Jersey, stranded, 2nd June, off Barfleur Lighthouse. Inquiry ordered 1st July. Proceedings pending.

145. *Brancepeth*, of Liverpool, stranded 16th May, on the south banks of Texel. Inquired ordered, but subsequently abandoned.

147. *Chillingham Castle*, passed the Downs 20th November, 1872, and has not been heard of since. Inquiry ordered 4th July. Proceedings pending.

148. *British Banner*, of Newcastle, stranded 27th June, on Sunk Sand. Inquiry ordered 15th July, but subsequently abandoned.

149. *Caldera*, of Swansea. Master accused of firing his ship after collision with the *Canning*, off Cape Horn, about 8th April. Court considered the master imprudent in proceeding on his voyage after the loss of his first and second officers, that the ship was prematurely abandoned, and that there was nothing to justify his setting fire to her. Master was guilty of a default of judgment, but wishing to deal leniently, the Court suspended his certificate for three months only, from 29th July.

150. *Duchess of Sutherland*, registered at London, stranded 21st June, on rocks off Holyhead. Inquiry ordered 16th July, but subsequently abandoned, as no one appeared in default.

151. *Glen Albyn*, of Hull, stranded 22nd June, at Bally Croneen. Inquiry ordered 19th July. Proceedings pending.

152. *Frederick William*, of Fowey, sprung a leak 2nd July, twelve miles off Rame Head. Inquiry ordered 19th July, but subsequently abandoned.

153. *Mary Gray*, of Londonderry, stranded, 29th June, on Arranman's Barrels. Inquiry ordered 19th July, and held at Londonderry

8th and 9th August, before H. Darcus, Esq., J.P., Captain Stokes, J.P., and W. Thompson, Esq., J.P., with Commanders Lock and Lillingston as nautical assessors. Casualty attributed either to deviation of compasses, or to sufficient allowance not being made for the set of the tide. Court held the master greatly culpable for not having a log or lead on board, though their absence did not happen to cause the casualty.

154. *Peter Graham*, of London, stranded one and a half miles from Nore Light, 24th June. Inquiry ordered 19th July, but subsequently abandoned.

155. *Manchester*, of Workington, stranded on Jordan Flats, 24th June. Inquiry ordered 19th July. Proceedings pending.

156. *Valetta*, of Newcastle, leaky in lat. 24° 32′ S., long. 54° 10′ E., 7th March. Inquiry ordered 19th July. Proceedings pending.

157. *Henry Woolley*, of Barrowstoness, foundered 150 miles E. of the Isle of May, on 27th June. Inquiry ordered 22nd July. Proceedings pending.

158. *Lord John Russell*, leaky on its voyage, 3rd July. Inquiry ordered 22nd July. Proceedings pending.

159. *Waverley*, of Southampton, stranded off Guernsey, 5th June. Inquiry ordered 22nd July, and held at Southampton, before J. H. Cooksey, Esq., J.P., and Alfred Pegler, Esq., J.P., with Admiral Powell and Captain Oates as nautical assessors. Court was of opinion that the master was throughout most cautious in the navigation of the ship, but the result proves that it would have been safer to anchor. The disaster might have been averted had the buoy been replaced on the Platte Boue Rock.

160. *Durham Castle*, of London, stranded in Holyhead Harbour. Inquiry ordered 24th July. Proceedings pending.

161. *Vesper*, of Cork, three men drowned, in attempting to leave the ship, by the boat swamping, 5th July. Inquiry ordered 25th July. Proceedings pending.

162. *Princess of Wales*, Glasgow, stranded three miles S.S.E. of Dundalk Lighthouse, 2nd July. Inquiry ordered 28th July. Proceedings pending.

163. *Glenrallock*, of Liverpool, stranded near the Esplanade Lighthouse, Fleetwood, 8th July. Inquiry ordered 28th July. Proceedings pending.

164. *Berwick*, of London. Explosion about five miles off the Dudgeon, 9th May. Inquiry ordered 29th July. Proceedings pending.

165. *Anna Frances*, of Carnarvon, foundered 6th June. Inquiry ordered 4th August. Proceedings pending.

166. *Aberdeenshire*, of Hull, stranded on Inner Binks Spurn, 16th March. Inquiry ordered 4th August.

167. *Bulgarian* and *Nestor*, came into collision in lat. 48° 50′ N., lon. 6° 50′ W., 18th February. Inquiry ordered 11th August. Proceedings pending.

168. *Dunmail*, stranded on the Mersey Bar, 10th August. Inquiry ordered on the 11th, and to be held in Liverpool, 18th August.

169. *John*, of Bridgewater, stranded between Slade Dock and Hook Light, 18th July. Inquiry ordered 12th August. Proceedings pending.

170. *Eleanor Alice*, of Beaumaris, foundered at Porthcain, 21st July. Inquiry ordered 13th August. Proceedings pending.

171. *Nigretia*, of London, stranded on Carpenter's Rock, 14th June. Inquiry ordered 15th August. Proceedings pending.

172. *Creole*, of Belfast, stranded half a mile S. of the Calf of Man, 27th July. Inquiry ordered 16th August. Proceedings pending.

173. *Almora*, of London, started stanchions and deck-seams, lat. 42° 59′ N., long. 62° 43′ W., 12th July. Inquiry ordered 16th August. Proceedings pending.

174. *Venus*, of Stranraer, stranded off the Tees Bar, 20th May. Inquiry ordered 16th August. Proceedings pending.

175. *Mary Jane*, of Halifax (Nova Scotia), stranded off Skerries 20th July. Inquiry ordered 16th August. Proceedings pending.

176. *Waveney*, of Lowestoft, stranded N.E. end of Longsand, 31st July. Inquiry ordered 16th August. Proceedings pending.

177. *Muriel* and *La Escocesa* in collision off Birkenhead Dock, 8th August. Inquiry ordered 16th August. Proceedings pending.

Inquiries Abroad.

168. *Belle Isle*, of Liverpool, abandoned 60 miles off Sydney, 14th April. Inquiry held before the Sydney Marine Board. Master was exonerated. The straining of the ship in a heavy gale caused her to leak, the pumps were choked by the sand ballast, and the shifting of the ballast threw the vessel on her beam-ends.

169. *Fanny Nicholson*, stranded in King George's Sound, 23rd November. Inquiry held at Albany, before G. Hare, Esq., J.P., and Sir Thomas Campbell, J.P., with J. K. Bogart, Esq., as nautical assessor. Negligence on part of owners or Lloyd's agents, in allowing the ship to go to sea with defective cables. Master showed want of judgment.

170. *Burlington*, of Singapore, stranded on Vernon Shoals, 13th December, 1872. Inquiry held at Singapore, before F. H. Gottlieb, Esq., with Mr. H. Ellis and Mr. John L. Kirby as nautical assessors. Court considered the vessel was not properly equipped when she com-

menced her voyage, and that the master showed a grave want of judgment.

171. *Roman*, steamship, of Southampton, stranded on Dassen Island, 25th May. Inquiry held at Cape Town, before J. Campbell, Esq., resident magistrate, with Mr. G. D. Perry as nautical assessor. Court only considered the master guilty of a lack of judgment, and admonished him.

172. *Bella Maria*, of Liverpool, stranded on the reef south of Rodrigues, 11th February. Inquiry held before the Mauritius Marine Board, which exonerated the master and his officers, acquiescing in the main with what was said with regard to the vessel being undermanned.

173. *Egean*, of Leith, stranded on one of the Maldive Islands, 4th May. Inquiry held before the District Court of Gallé. Court thought the master had acted imprudently, but could not do more than censure him severely.

174. *Drummond Castle*, steamship, stranded on or near Chinsan Island, 31st May. Inquiry held at Shangai Consulate, with H.B.M. Consul as President of the Court. The ship was recklessly navigated by Alexander M. Ritchie, the master, and his certificate was suspended for twelve months, from 7th June. Second mate's certificate was suspended for six months, for not assisting the master, and leaving the ship without orders. Others were also punished.

175. *Vesta*, stranded on Richmond River Bar, 26th March. Inquiry held before the New South Wales Marine Board, 21st May. The Board suspended master's certificate for twelve months, for attempting to cross the bar in darkness when there was no necessity for it.

176. *Hotbank*, stranded in Algoa Bay, 25th April. Inquiry held at Port Elizabeth, before A. Wild, Esq., resident magistrate, and Mr. F. Skead as nautical assessor. Master was found in default, and his certificate was suspended for three months. The mate's certificate was cancelled for disobeying, and striking the master.

Royal Navy and Royal Naval Reserve.

Abbreviations.—Ad., Admiral; A., Assistant; C., Captain; Cr., Commander; C., Chief; Cl., Clerk; Cn., Chaplain; D., Deputy; E., Engineer; F., Fleets; H., Hospitals; I., Inspector; L., Lieutenant; M., Midshipman; N., Navigating; P., Paymaster; r., Retired; S. L., Sub-Lieutenant; Sn., Surgeon; St., Staff; N. Inst., Naval Instructor; 1st Class A. E., 1st. Class Assistant Engineer; 2nd Class A. E., 2nd Class Assistant Engineer; N. Ct., Naval Cadet; Ng. Ct., Navigating Cadet; R. N. R., Royal Naval Reserve.

Promotions.—**St. Sn.**—Jacob E. Dyas, 1861.

Appointments.—**C.**—Anthony H. Hoskins, 1863, to *Sultan;* Samuel P. Townsend, 1868, to *Crocodile;* James E. Bickford, 1868, to *Serapis;* John E. Parish, 1863, to *Princess Charlotte*, as Commodore of the 2nd

Class. **Cr.**—Mervyn B. Medlycott, 1869, to *Spiteful;* Walter Stewart, 1869, to *Growler;* Granville T. Nicolas, 1867, to *Philomel;* Howard Kerr, 1869, to Coastguard; Samuel Long, 1868, to *President;* Frederic de V. Sanders, 1870, to Coastguard; Edmund St. John Garforth, 1867, to *Philomel.* **St. Cr.**—Augustus J. Burniston, 1870, to *Pembroke,* for *Rupert;* John H. Tully, 1872, to *Pembroke,* for *Raleigh.* **L.**—Henry C. Carré, 1872, David L. Dickson, 1872, George F. Hall, 1873, and Aston E. M'Murdo, 1872, to *Cambridge;* Herbert G. Archer, 1872, Edward H. Clarke, 1872, Pierre G. Evans, 1872, Henry J. Oldfield, 1872, and Francis E. Ramsden, 1872, to *Excellent;* Atwell P. M. Lake, 1863, Victor E. J. B. Von Donop, 1866, Alfred C. Carew, 1870, and Henry P. T. Skinner, 1871, to *Serapis;* Francis J. J. Elliott, 1865, Lenox Napier, 1868, Wadham N. Diggle, 1872, and Edward W. Hodginkson, 1872, to *Crocodile;* George F. Hall, 1873, to *Resistance;* Clifton Lewes, 1872, to *Cambridge;* George M. Mansell, 1872, to *Revenge* (temporary as Flag Lieutenant); Cecil W. Beaumont, 1864, to *Northumberland;* Chester Jones, 1872, to *Serapis;* Charles G. Gardiner, 1872, to *Spiteful;* Malcolm de S. Edge, 1872, to *Revenge* (for temporary service); Gerald C. Langley, 1872, to *Sultan;* Charles W. Herbert, 1870, to *Duke of Wellington;* Robert O. Webb, 1868, to *Growler;* Herbert C. Sayce, 1872, to *Serapis;* Henry Rose, 1864, to *Implacable;* William H. G. Goodlake, 1872, to *Lord Warden* (additional); John T. Luckraft, 1867, to *Triumph.* **N. L.**—Richard G. Roe, 1872, to *Pembroke,* for *Eclipse.* **S. L.**—Henry B. Anson and William D. V. Hamilton, to *Goshawk;* Herbert K. L. Phillips and Wilmot W. H. Rivet, to *Spiteful;* Frederic R. Pelly, to *Growler.* **M.**—William H. Chamberlain, to *Invincible* (supernumerary); Louis F. C. Jackson and Hugh P. Williams, to *Spiteful;* Maurice W. Portman, to *Spiteful* (for disposal); Gerald J. Potter, to *Sultan;* Francis W. Dowell, to *Hercules;* Hon. Patrick M. Hely-Hutchinson, to *Duke of Wellington.* **N.C.**—Arthur L. Hughes-Hughes, to *Spiteful.* **R.N.R.**—A. G. Guest, M.P., to be Honorary Lieutenant; Hamilton Goold Adams, Edward Massey Gordon Armstrong, David Wilson Barker, Edmund Arthur Hayward Bingham, Lawrence Hugh Crawford, Duncan Forbes, George Douglas Freeth, George William Gape, Francis Farington Gardiner, Clarence Canning Hearsey, John Lewis, Francis George Marshall, Michael John Pattinson, Louis Godfrey Puckle, Alfred James Reid, Arthur Rogers, John Edward Wollaston Stansfield, William Armstrong Steele, Edwin Henry Story, John Lancaster Tindall, Francis Melville Tuke, Arthur Warton, and John Alexander Williams, to be Midshipmen. **E.**—Richard W. Topp, 1864, and James Leighton, 1872, to *Revenge,* for *Goshawk.* **2nd Class A. E.**—Frederic A. Cocks (acting), 1872, to *Amethyst.* **St. Sn.**—John Nihill, M.D., 1868, to *Serapis;* Seaton Wade, 1870, to *Crocodile;* Samuel S. D. Wells, to

Lord Warden, for Haulbowline Hospital. **2nd Class St. Sn.**—Thomas L. Bickford, 1870, to *Royal Adelaide* (for temporary service); Henry A. Close, 1872, to *Duke of Wellington* (for temporary service); John B. Nicoll, M.D., 1871, to *Pembroke* (for temporary service); Patrick Keelan, 1870, to *Asia* (additional); Septimus Terry, 1871, to *Duke of Wellington* (additional); Alexander Turnbull, M.D., 1870, to *Cambridge* (additional); Joshua P. Courtenay, 1872, to *Nankin* (for temporary service); John M. Hunter, M.D., 1870, to *President* (temporary); Bradley Gregory, 1870, to *Spiteful;* Henry Hadlow, 1868, to *Pembroke* (for Melville Hospital). **Sn.**—David J. Freeman, 1872, to *Rattlesnake* (additional, for disposal); Edward C. Thompson, A.B., 1872, to *Lord Warden;* Septimus Sexton, 1869, to *Jackal;* Robert A Bernal, M.D., 1872, to *Spiteful;* Cecil Drake, 1872, to *Narcissus;* Robert Atkinson, 1854, to *Implacable*, for *Sealark;* John H. Pemberthy, M.D., 1868, to *Impregnable* (additional, for *Squirrel*); Edward W. Doyle, 1864, to *Orwell;* William P. M. Boyle, 1867, to Malta Hospital; William B. Fletcher, 1863, to *Wizard;* Richard D. White, 1873, John Wilson, 1873, Edmond A. Lucas, 1873, Alexander Flood, 1873, Michael Fitzgerald, 1873, and Charles C. Godding, 1873, to *Royal Adelaide* (additional, for Plymouth Hospital); Bernard W. Wellings, 1873, John R. Leech, M.D., 1873, Henry J. Madders, 1873, Robert Sproule, 1873, Samuel Browne, M.D., 1873, Henry B. Harrison, 1873, Stewart J. Hamilton, 1873, and Charles W. Magrane, 1873, to *Duke of Wellington* (for service at Haslar Hospital); Alexander W. Flood, 1871, to *Royal Adelaide* (for Plymouth Hospital). **Cl.**—William H. Rowe, to *Spiteful.*

Retirements.—**C.**—Edward W. Vansittart, C.B., 1856. **Cr.**—William St. J. S. Hornby, 1867. **L.**—Robert B. Clements, 1868; John G. S. Clarke, 1854, as Commander; Charles Lyon, 1860. **S. L.**—Alfred R. Sims, 1870. **C. E.**—William M. Biden, 1860; Benjamin F. Pine, 1863. **Cn. and N. Inst.**—Rev. Percy Rogers, 1852; Rev. John Milner, 1855. **St. Sn.**—William Crawford, 1872. **P.**—Isaac W. R. B. Galsworthy, 1864; John G. Whiffin, 1851, as Paymaster-in-Chief; John Lyon, 1857. **A. P.**—Edward D. Lewis, 1869; Robert Wright, 1869; James A. Perkins, 1865; John A. K. Greet, 1869; John J. Hill, 1869.

Deaths.—**C.**—Robert B. Miller, 1866, *r.* **Cr.**—Edward A. Blackett, 1870, *r.* **St. Cr.**—Manser Bradshaw, 1863, *r.* **L.**—Henry Waller, 1859. **M.**—J. G. W. Grant Ozzard. **2nd Class St. Sn.**—Robert Edwardes, 1863, *r.* **P.**—John H. Cooke, 1814, *r.*

Board of Trade Circulars.

Screw Tunnels.—It is necessary that the Screw Tunnels of all vessels should be strongly constructed and water-tight; and the Surveyors should require this to be done in the case of all new vessels coming under their notice. The Surveyors are to see that an after water-tight compartment is fitted to cover the stern tube of the Screw Shaft, if there is not one already.—*Circular No.* 613, *April*, 1873.

Fees for Survey of Foreign Steamers.—The Board of Trade have decided that the fee to be charged for the survey of a Steamship built in this country for Foreign Owners, shall, in all cases, be not less than the fee charged for Passenger Certificates granted for a full period of twelve months, notwithstanding that the Builders or Owners may apply for a short Certificate. There is no legal obligation for such ships to be surveyed at all; but if Owners or Builders wish them surveyed for their own purposes, they are not to be allowed, for their own purposes, to reduce the fees. Superintendents should, therefore, be careful to receive, with the application for survey (Form Stm. 39) for every *new* Steamship, by whomsoever the application is made, a fee for a period of not less than twelve months. Surveyors should grant a declaration for a shorter period if they think fit, but they should call the attention of the Board of Trade, by a remark on their declaration, to the fact that the vessel is surveyed on the application of Builders or Agents, for Foreigners.—*Circular No.* 614, *March*, 1873.

Pressure on Boilers.—The Board of Trade think it desirable to instruct the Surveyors that a pressure once allowed on the boiler of a passenger steamship is not, *under any circumstances whatever*, to be increased, unless the Surveyor has previously written for and obtained the instructions of the Board. In cases where a Surveyor is of opinion that an increased pressure may with safety be allowed, he should communicate with the Surveyor who last surveyed the vessel; and if, on learning the reasons why the existing pressure was formerly allowed, the Surveyor is still of opinion that it may be increased, he should communicate all the facts of the case to the Board of Trade; but, as above stated, the pressure should not in any case be increased until the question is decided by them.—*Circular No.* 615, *April*, 1873.

Wrecked Buoys, &c.—In future all casualties to buoys, &c., and all buoys found adrift, should be reported by the Receiver direct to the Lighthouse or Harbour Authority to whom the buoys belong: and the fact of their having been so reported should be communicated to the Board of Trade, either by letter or on the usual Form for reporting property taken into Receivers' possession.—*Circular No.* 625, *May*, 1873.

YELLOW FEVER.—The attention of the Board of Trade has been called to the continued prevalence of Yellow Fever at Bahia, Rio de Janeiro, and other ports on the North East Coast of South America. The Board desire to recommend to the notice of Masters the following precautionary rules :—1. Do not moor or anchor, if it can be avoided, at the mouths of rivers. 2. Do not ballast your vessel from the beach. 3. Take out twice as much quinine as is advised in the Official Scale of Medicines. 4. Look particularly to the cleanliness of forecastles and deck-houses. 5. If the Fever appear, make for the nearest port as quickly as possible in order to procure medical aid, and follow out strictly the directions contained in the Ship Captain's Medical Guide.—*Circular No.* 629, *May*, 1878.

CLEARANCE OF SHIPS UNDER WEIGH.—It has been represented to the Board of Trade that Emigration Officers cannot satisfactorily carry into effect the duties required of them by statute, while ships are under weigh. The Passengers Acts do not contemplate the clearance of Passenger ships after the voyage has commenced. There must always necessarily be bustle and confusion in a ship passing out of dock and going straight to sea, which will prevent that steady painstaking inspection so necessary to the proper performance of the work ; moreover, when officers are taken down the river, so much time is occupied that ships at anchor and ready may lose a tide by having to wait for the return of an officer carried away to a distance. The Board of Trade have, therefore, given directions to the Emigration Officers not to attempt to perform the grave and important work required of them, after a ship is under weigh.—*Circular No.* 632, *June*, 1873.

DRAUGHT OF WATER.—It would appear from a recent case in which the draught of water of a vessel had been recorded, that an *estimate* of the clear side was given on the Form "Surveys 101." The attention of Surveyors is directed to the necessity of recording only such particulars as are absolute facts, obtained by actual measurement, and such as can be distinctly relied upon as evidence in law, under the provisions of the Merchant Shippping Act, 1871, Section 5. Those ships only are to be entered in the returns whose clear side the Surveyor actually measures, as directed in Circular 623, by placing a tape rod or plumb-line on the ship's side.—*Circular No.* 633, *June*, 1873.

CASUALTIES TO BOATS.—With reference to the 10th paragraph of the Instructions in respect of Wreck and Salvage, the attention of Receivers of Wreck and of Officers of Coast Guard is called to the fact that the sections of the Merchant Shipping Act, 1854, upon which the paragraph in question is founded, relate to boats as well as to ships, and that it, with the following three paragraphs, should be read as applying to both ships and boats. Any casualty to a boat, in which loss of life occurs

should be reported to the Board of Trade.—*Circular No.* 635, *June*, 1873.

SURVEYORS' GENERAL DUTIES.—In addition to the duties referred to in Circular No. 599, the Board of Trade Surveyors are required to undertake the measurement for tonnage of all new Ships built in this country requiring to be measured, whether intended for British Registry or not.—*Circular No.* 636, *June*, 1873.

EFFICIENCY OF THE APPARATUS.—1. The officer in charge of Life Saving apparatus is responsible for its efficiency and for that of the men who work it. It should be exercised once in every three months whether or not it has been used at a wreck during that period. One or two rockets and not more than four shots may be fired, if the Inspecting Commander or officer in charge of the apparatus thinks it necessary or desirable. The whole operation of setting up the hawser and hauling persons backwards and forwards to and from a tree, a flagstaff, or other suitable object, by means of the life-lines, should be gone through on each exercise. A report, on L. S. A. 14, should be made to the Board of Trade whenever an exercise has been held, whether any payment is, or is not, due. 1A. A report on the condition of the apparatus should be made annually on the 30th June, on Form L. S. A. 16, or L. S. A. 17, as the case may be. The Board will, on all occasions, be glad to receive any observations and consider any suggestions that will, in the opinion of the Inspecting Commander or officer in charge of the apparatus, assist in the attainment of the object in view—viz., the saving of life from shipwreck.—*Circular No.* 637, *June*, 1873.

SURVEY OF NEW STEAMSHIPS.—The Board of Trade cannot in some cases regard as a satisfactory survey of a new steamship, a survey made only after the hull is complete, and is cemented and painted. The Surveyors are instructed to decline to grant declarations for any new steamer unless they have seen her before she is painted or cemented. This will entail an extra visit or two, before the ship is finished, but as the Surveyors now measure ships for tonnage, and have to go more frequently to shipbuilding yards than before, they will be well able to inspect before the cement and paint are put on. Any survey while building is not to interfere with the complete inspection afterwards; but is to be made solely with a view of enabling the surveyors to form an opinion of the workmanship, material, and construction. In cases in which the Surveyors decline declarations under this Circular, the Owners should be referred to the Board of Trade, in order that the Board may decide specially in each such case what steps shall be taken.—*Circular No.* 688, *June*, 1873.

INTERNATIONAL TONNAGE.—The Board of Trade forward herewith, for the information and guidance of officers concerned in the duties of

measurement and registry of ships, a copy of a recently-issued Order in Council which extends to vessels of the German Empire the advantages held out by the 60th section of "The Merchant Shipping Act, 1862." In consequence of the amount of deduction for propelling power being different in the two countries, option is granted by the enclosed order to the masters of steamships of the German Empire, whereby the said masters may elect to have the engine-room measured under the rules relating to British ships. When the engine-room is measured according to the British rules in such cases, a "Certificate of British Tonnage" is to be granted adopting thereon the gross tonnage as stated in the German Certificate of Registry, and deducting from the gross tonnage the allowance for engine-room under the British rules, and also the allowance on account of spaces occupied by seamen or apprentices, and appropriated to their use. A copy of the document furnished to the German master is to be sent to the principal surveyor for tonnage, with a note thereon of the measurement of engine-room, and the amount of deduction under the German rules. The fees for admeasurements under the accompanying Order in Council are to be the same as for the admeasurement of British ships for the time being, but only for the spaces actually measured.—*Circular No.* 693, *June*, 1873.

Life Boats and Life Buoys.—The 292nd Section of the Merchant Shipping Act, 1854, is as follows:—

The following rules shall be observed with respect to Boats and Life Bouys; (that is to say):

"(1.) No decked ship (except ships used solely as steam tugs and ships engaged in the whale fishery) shall proceed to sea from any place in the United Kingdom unless she is provided, according to her tonnage, with boats duly supplied with all requisites for use, and not being fewer in number nor less in their cubic contents than the boats the number and cubic contents of which are specified in the Table marked S. in the Schedule hereto, for the class to which such ship belongs:

"(2.) No ship carrying more than ten passengers shall proceed to sea from any place in the United Kingdom unless, in addition to the boats herein-before required, she is also provided with a Life Boat furnished with all requisites for use, or unless one of her boats herein-before required is rendered bouyant after the manner of a Life Boat:

"(3.) No such ship as last aforesaid shall proceed to sea unless she is also provided with two Life Buoys; and such Boats and Life Buoys shall be kept so as to be at all times fit and ready for use; Provided that the enactments with respect to Boats and Life Buoys herein contained shall not apply in any case in which a certificate has been duly obtained under the 10th Section of the 'Passengers Act, 1852.'"

Questions have arisen under the above-quoted section, as follows, viz.:—

1. How should the contents of a boat be ascertained?
2. What should the Surveyors pass as a Life Boat?
3. What should be deemed to be "all requisites for use" in boats?
4. What should be deemed to be a Life Buoy?
5. Should such of the contents of a boat as are taken up by a steam engine and boilers be deemed to be cubic contents of the boat?
6. In the case of a boat fitted with steam engines, should the boilers be provided with safety valves out of the control of the engineer when the steam is up?

For the guidance of Surveyors in giving declarations under the Merchant Shipping Acts, and of officers passing ships under the Passengers Acts, the following instructions on the above points are issued:—

1. In ascertaining the cubic contents of boats the surveyor should bear in mind, that hitherto the cubic contents of a boat have been assumed to be the contents of the extreme dimensions of the boat, and have been ascertained by multiplying the length, breadth outside, and depth inside, into each other. Thus a boat 28ft. long, by 8ft. 6in. wide, and 3ft. 6in. deep, has been accepted as having a cubic capacity of 833 cubic feet, this is of course not accurate. To ascertain the contents of a boat accurately, Stirling's rule should be applied, but as that would entail much labour, the Board of Trade have adopted the use of the factor ·6. In future, therefore, the Surveyor is to take the length, breadth, and depth, as before, to multiply them into each other, and then to multiply the product by ·6. Thus the boat $28 \times 8{\cdot}5 \times 3{\cdot}5 = 833$ cubic feet, 833 cubic feet $\times$ ·6 $= 499{\cdot}8$, this boat will therefore be assumed to be 500 cubic feet, instead of 800 cubic feet as heretofore. The dimensions of the boats will of course remain the same as before, but their cubic contents with the same dimensions will be described as less. The totals of contents given in page 5 of circular 591, will have to be multiplied by the factor ·6.

2. As regards Life Boats, square sterned boats are not to be considered as Life Boats.—No boat should be passed as a Life Boat wherever carried, unless at least one-third of its cubic capacity is occupied by strong and serviceable air-tight compartments, so constructed, fitted, and arranged that water cannot find its way into them, zinc is not to be used.

These air-tight compartments must be so distributed as to give the boat good buoyancy and stability; whether a part of the air cases should be under thwarts or whether they should be all in the end and sides must be left to the option of the owner.

Spaces filled with, or containing any material are not to be deemed to

be air spaces. No boat fitted with a steam engine is to be passed as a Life Boat.

No Life Boat other than a metal Life Boat should be passed if carried sufficiently near the funnel to be injuriously affected by the heat.

3. As regards requisites for use.—The Surveyors should see that in all boats the full complement of oars, and two spare oars, at least are provided, in large boats more than two spare oars ought to be provided; that each boat has two plugs, and one set and a half of thole pins or crutches attached to the boat by lanyards, a bailer, a rudder and tiller, or yoke and yoke lines, a painter of sufficient length, and a boat hook, the rudder and bailer to be attached to the boat with sufficiently long lanyards.

In the case of Life Boats, a mast or masts, with at least one good sail for each mast, and a life jacket or life belt for each oarsman, and one for the coxswain must also be provided. No life jacket or belt should be passed that is not capable of floating on the water for 24 hours with 32 pounds of iron suspended from it.

4. As regards Life Buoys.—No Life Buoys stuffed with rushes, or with cork shavings, or other shavings, or granulated cork, or any loose material should be passed. All cork Life Buoys should be built of solid cork, and fitted with life lines and loops, and none should be passed that will not float for 24 hours in water, with 28½ pounds of iron suspended from it.

If Life Buoys are not made of solid cork, then any other strong Life Buoy of an approved pattern may be passed, capable of floating in the water, for 24 hours, with forty pounds of iron suspended from it. No contrivance is to be passed as a Life Buoy that requires inflation before use.

5. As regards steam launches or boats fitted with steam power, the contents taken up in the boat by the engine and boiler are not to be deemed to be part of clear contents of the boat.

6. As regards the safety valves fitted to the boilers of steam launches and of other boats carried by passenger steamers: the Surveyors should see that the boilers are provided with safety-valves out of control when steam is up, and subject to precisely the same rules as the safety-valves on the main boilers. The lifting or easing gear should actually lift the valve, and not merely the weight; the boilers should also have a steam guage, a glass water guage, and test cocks.

This Circular should be strictly complied with in all cases after 1st January, 1874.—*Circular No.* 646, *July*, 1873.

SHIPPING AND MERCANTILE GAZETTE CORRESPONDENCE.

(Reprinted by special arrangement with Sir WILLIAM MITCHELL.)

LAY-DAYS.—In April last I chartered my ship from Gefle to London. The charter stipulated—"twenty running-days, Sundays excepted, for loading, and eighteen like days for discharging the cargo." The vessel was detained loading at Gefle eight days above the days stipulated in the charter, which was endorsed on bills of lading. On my arrival here charterers refuse paying demurrage for these eight days, stating that, if vessel is loaded and discharged within the joint days stipulated in the charter for loading and discharging, I have no claim against them. Are charterers right in this, or am I entitled to demurrage for the eight days used at Gefle above the days stipulated in the charter for loading, and without reference to the discharging days?—When it is stipulated in charter-parties that a given number of days are to be allowed for loading and discharging, the charterer may take all the time to complete the two operations severally, and jointly, without giving rise to demurrage; but if a specific number of days be mentioned for loading, as also for discharging, the overtime in the former cannot be made up out of the allowance for the latter. In our correspondent's case the time allowed for loading is twenty, and for discharging eighteen working-days. These were two distinct and specific performances. If the charter had expressed "thirty-eight days" for the two operations, the time might have been divided in any way the shipper and consignees pleased. The endorsement on bills of the lading would not relieve the charterer from his liability to pay the eight days' demurrage incurred at Gefle. Such endorsements do not bind the bill of lading holder to pay demurrage for detention at the port of loading. (See "Capel *v.* Comfort," Common Pleas, May 29, 1861, and the previous cases of "Stindt *v.* Roberts," "Weggener *v.* Smith," Common Pleas, November 3, 1854, and "Jesson *v.* Solly." The parting with the cargo, however, and thereby surrendering any lien the shipowner may have, does not relieve the freighter of his liability under his contract to pay demurrage. *The Mary Eliza*, "Harrison *v.* Spaith," Queen's Bench, June 13, 1854.) The endorsee of a bill of lading receiving goods is not liable for demurrage, at all events where he is not the cause of the detention, unless it contains an express stipulation to that effect. ("Oliver *v.* Muggeridge," Queen's Bench, Jan. 18, 1859; and see, also, "Smith *v.* Sieveking," Queen's Bench, May 2, 1855.) The receiver of the goods under the bill of lading is entitled to receive his property under the conditions embodied therein, and is not bound by a mere endorsement on the back of a bill of lading, nor in any case unless the terms of the charter-party with respect to time allowed

for loading and discharging are made an express stipulation, or that the bill of lading makes the goods deliverable on payment of demurrage. The charterer had no right to set off the eight days lost at Gefle against the same number of days gained here; and it is our opinion that he is liable for the detention in loading.

ALLOTMENT NOTE.—Am I justified in stopping payment of seamen's allotment notes under the following circumstances:—Four months ago I had a letter from the captain of my ship at Monte Video stating the vessel was at that time about to proceed up the River Plate to load produce for Europe, but since then I have had no news or letter from the ship, and, consequently, do not know whether the men are on board, or whether they have deserted?—A seaman is presumed to be duly earning his wages unless the contrary is shown to the satisfaction of the Court, either by the official statement of the change in the crew caused by his absence, made and signed by the master, as by the Act required, or by a duly certified copy of some entry in the official log-book to the effect that he has left the ship, or by a credible letter from the master of the vessel to the same effect, or by such other evidence, of whatever description, as the Court, in its absolute discretion, considers sufficient, to show satisfactorily that the seaman has ceased to be entitled to wages out of which the allotment is to be paid. (Vide section 169 of the Merchant Shipping Act, 1854.) Without some reasonable proof, therefore, of the seaman having left the ship, or of the loss of the vessel, the magistrates would be bound to make an order for payment under an allotment note.

BURIAL EXPENSES.—Is the owner of a ship liable for burial and other fees paid abroad for a seaman drowned under the following circumstances:—Whilst working on a stage at the ship's side he lost his hat; the seaman jumped after it, and immediately sank. He was found after a search of two days, was buried on shore, and his account attested by the Vice-Consul, and the balance of his wages, after deducting the above named fees, was paid by the owner in the usual way. On the vessel's arrival in Liverpool, the shipping master refuses to allow the deduction, which has to be refunded before the captain can procure his necessary papers?—The Consul interpreted the law literally; the shipping master in a broad and liberal sense. By the 228th section of the Merchant Shipping Act, 1854, it is enacted that—"If any seaman receives any hurt or injury in the service of the ship to which he belongs the expense of providing the necessary surgical and medical advice, with attendance and medicines, and of subsistence until he is cured or dies, ... and the expense of his burial, shall be defrayed by the owner of the ship, without any deduction from wages. This refers to hurt or injury in the service of the ship. A man who jumps overboard to save his hat and is drowned, though in the employ of the

shipowner at the time, can hardly be said to receive any hurt or injury "in the service of the ship." A seaman who may be removed from a ship for the pupose of preventing infection, or otherwise for the convenience of the ship, and subsequently returns to his duty, is not chargeable with the hospital expenses; but "in all other cases, any reasonable expenses duly incurred by the owner for any seaman in respect of illness, and also any reasonable expense duly incurred by the owner in the respect of the burial of any seaman who dies whilst on service, shall, if duly proved, be deducted from the wages of such seaman." The seaman who was drowned did not receive any hurt or injury, in the execution of his duty, for which medical attendance was necessary. If he had been rescued and died on shore, the shipowner could not have been compelled to pay the charges of interment. The man died "whilst on service," and in the strict letter of the Statute the Consul acted according to law in allowing a deduction from the wages for the expenses of burial. If a seaman is taken ill and dies in a foreign port he "cannot return to his duty," and, therefore, his burial expenses may be charged on his wages. The same principle would apply where a man voluntarily jumps overboard and is drowned without any previous hurt in the service of the ship.

Canadian Act.—Deck-loads.—According to the Canadian Act of Parliament respecting deck-loads, it is not clear to us whether a vessel can take a deck-load (say deals) after the 1st of October, from a port in Canada for Europe or not.—No vessel can clear out from a Canadian Port with a deck-load after the 1st of October, nor, after clearing from a Port of the Dominion, take in a deck-load on the passage while sailing out of the jurisdiction of the Dominion. A vessel could not, for instance, clear out from Quebec and take in a deck-load at the lower ports of the Gulf of St. Lawrence or in the channels.

Thirds and Demurrage.—Have I any claim on my owner for demurrage? I sail my vessel by the shares, and have to find my crew with provisions and wages. I arrive at a port of discharge, a small port, and he could not get any labourers to discharge cargo, all in the neighbourhood being employed harvesting. My owner, who belongs to the cargo, promised to pay me and my crew for working cargo out, and has detained me three weeks for want of carts to take the coals away—sometimes only one cart in an hour. The rules of the port are:—Ship paying 3½d. per ton, and two men; merchant paying 8d. per ton. My owner offers me only 2½ per ton for myself and crew?—The owner of the ship was the owner of the cargo, and, therefore, there could be no charterer in the case. Want of labourers and carts would fix the hirer of a ship with demurrage; and, under the circumstances mentioned by our correspondent, he would be entitled to compensation for the un-

reasonable detention of the ship. On the other hand, any demurrage due should be divisible between the owner and the master, in the proportion of shares. The exact sum due to each should be easily apportionable.

INSURABLE INTEREST.—I had a vessel which loaded at a foreign port and sailed for United Kingdom. Some days afterwards she sprung a leak, and was obliged to put into another foreign port, when a survey was held upon her, and she was ordered to discharge all her cargo to undergo necessary repairs. I advanced the money myself for the said repairs, and insured the amount as advance for repairs, &c. The vessel was insured to her full value, independently of the amount insured on the advance for the repairs, &c. On her passage home she was lost. Am I entitled to the full amount insured on the hull as well as the amount insured on the repairs as advances, &c. ?—If the repairs were executed abroad for the benefit of ship, freight, and cargo, a bottomry bond might have been given by the master secured upon those three collective interests, and each would have been liable for its share of the payment. A bottomry bondholder has a prior claim to the mortgagees of a ship, the bond having been granted for necessary expenses incurred to enable her to complete the voyage. ("Dobson *v.* Lyall," Court of Chancery, 1847.) And, therefore, money advanced to repair a vessel in order to prosecute the voyage, should be an insurable interest. A part-owner who was master of the *Staffordshire*, gave a bond for repairs at Melbourne, and this was held to be valid. (A. C Dublin, April 27, 1871.) A shipowner may insure as freight the profit expected to be derived from carrying his own goods, in his own ship. ("Devaux *v.* L'Anson," Common Pleas, May 8, 1839; "Flint *v.* Fleming," 1830; "M'Swiney *v.* Royal Exchange Assurance Company," Exchequer Chamber, January 22, 1850.) Underwriters are held liable for total loss on a policy of insurance on advances, as the cost of provisions for Chinese coolies, who forcibly took possession of the ship in which they were being conveyed, and made their escape. ("Naylor *v.* Palmer," Exchequer, May 27, 1853; affirmed July 11, 1854.) It may be urged that money advanced by the owner of an insured ship does not entitle him to claim under a policy, because the money so insured would be in excess of the value of the vessel as agreed upon at the time of insuring. "It is a common practice (said the Lord Chancellor) to insure for more than the value of the vessel, because the owner, by her loss, is deprived of more, and the insurers always pay, unless there is fraud." ("Walker *v.* Fletcher," Chancery Court, January 27, 1842.) We are of opinion that a shipowner who advances cash for repairs to a ship in a foreign port may have, as to those advances, an insurable interest. If the policy excluded the payment of all damage under 3 per cent. the

3 per cent. would be a value at risk, and insurable; but if the risk was insured and recoverable under the policy, and paid by the insurers on the ship, it could be claimed by those underwriters on the ship from the assured.

Bottomry Bond.—My ship met with damage on her outward voyage, and was repaired at a foreign port. The master gave a bottomry bond on ship and cargo for the advances. Is this an insurable interest?—Loans on bottomry and respondentia may be insured by the lender, and advances made by a shipowner after the ship has sailed on the voyage should come under the same category. An insurer must have "benefit from its existence; prejudice from its destruction." The agreed value of a ship at the time of insurance was £8,000, whereas previous to her loss her alleged value was only £2,700. The underwriters claimed to pay on the lowest of the two values, but the Court of Common Pleas, in confirming the judgment of the Court below, held that, as there was no suggestion of fraud, the underwriters were liable for the larger amount—Mr. Justice Willes remarking, that there was no case where insurers had been allowed to draw a distinction between their liability before and after the decision of the owners as to whether they would carry out the necessary repairs to the ship or not. ("Barker *v.* Janson," January 15, 1868.) Supposing the leak to have been caused by perils and accidents of the sea, the shipowner was bound to repair the vessel, or, if she was not worth repairing, to have abandoned her to the underwriters; and the cargo should have been sent home by another ship.

Signing Bills of Lading.—I agreed to load a full and complete cargo of pit-props for a lump sum. The merchant sent men, and they commenced to load at all the three hatchways, and I therefore found it impossible to keep tally of the number of pieces. When the ship was loaded, the merchant's foreman told me I was to go with him to the office to sign bills of lading, as the merchant is to wait on me at seven o'clock at night. He was not there, and the foreman took me to the hotel. The merchant had gone, but left word that I was to call at nine o'clock, p.m. I did so, and was requested to call at nine o'clock the next morning. I left word for merchant to call on my broker, and he would sign for me as per charter. I gave the broker authority to sign as per charter, but not for the number of pieces, and I sailed in the meantime for my port. On arrival, I find the merchant has protested against me, and has kept the expenses off my freight. Can he do so?—If the ship could have been detained till the morning without any great peril or inconvenience, it might have been as well had the master waited and signed the bills of lading. When a ship is loaded, however, and ready for sea, any unreasonable detention afterwards, is deemed to be a deviation, and may avoid a policy of insurance on ship and cargo. Detention

by a merchant through not presenting bills of lading, entitles a shipowner to claim compensation for the enforced delay. It is not legal to deduct the cost of the props said to be short delivered from the freight. The cargo should have been held for the freight.

Registry under Foreign Flags.—The British Government has, ever since 1850, year after year, been meddling with the shipowners' business. Being a large owner of second-class vessels, I am determined the British Government shall go no further with intermeddling with my property, and under a foreign flag they shall all go. Which way have I to proceed to make my ships sail under the Dutch flag? A large body of shipowners of this port, like myself, have made up their minds to change flags.—The Netherlands Consul at Sunderland should be applied to. The application can be made through him. Any agent in Holland would manage the business there, if instructed. There is little difficulty in placing British ships under the flags of European States, but the British Government will look behind and beyond the mere registry if necessary.

Short Delivery.—It is the custom in Brazilian ports for the sugar to be counted in the warehouse, and then taken off by lighters to the ship. This was the case with me, and I am told that it is possible the sugar was all put into the lighter, but that before it was put on board the ship it was disposed of by the men in the lighters. The consignee tells me, if such is the case, the owners of the ship are liable, as the lighters were paid for by the ship, and the merchant has nothing to do with the sugar after it is counted in the warehouse; the ship then takes possession of it. What I want to know is—am I liable to the consignee or to the owner of the ship for short delivery? I can prove that I delivered all that was put on board my ship, but I am unable to say whether anything was, or was not taken out of the lighters. If the consignee can prove by a commission to the port of loading that the quantity of sugar stated in the bill of lading was put into the lighters, and that at the port of discharge 101 bags are short, can the consignee or owner of the bill of lading, by an action at law, make the ship pay the value thereof.—Whatever liability our correspondent has incurred is towards his employer, and not to the consignee. The consignee's claim, if any, is against the shipowner; and in any action against our correspondent by his employer, proof of neglect would have to be established to the satisfaction of a jury.

Advances on Freight.—In a charter from Quebec the freight is payable "one-third in cash on arrival, remainder after delivery of cargo by good and approved bill on London at four months' date following." Advances are made to the captain at Quebec, "by charterers' agents on usual terms," which were drawn for by the captain on them at thirty

days, and on which their agents charged 2½ per cent. interest, as well as insurance. Charterers contend the advances at Quebec ought to be deducted from the one-third freight payable in cash, whereas owners consider that as their (the charterers') agents charged interest, the advances should be deducted from the two-thirds freight payable by bill ?—Where a charter-party stipulates that advances are to be made to the master of the ship in the loading port, and a given percentage of freight also, the amount of the cash advanced for ship's disbursements cannot be set off against the advance on freight.

PERILS OF THE SEA.—In the month of April last year a vessel of mine was chartered to carry a cargo of coals from Lydney to Bridgewater. On running the bar (called the Gore), being thick with snow squalls, the lights could not be made out, and the vessel was run on the south side of the channel, and her bottom was completely beaten out. She could not be removed until the cargo was thrown out, although every effort was made to do so. The cargo was therefore thrown out, and the vessel filled with empty casks to float her. A tug was employed to tow her to Bridgewater, where she was offered for sale for less than £50. The merchants have sued me (what amount I cannot tell) for damages for the loss of the coals, although the captain noted protest in due time, and the vessel was reported and received in the Customs as a wreck. Can I be made to pay ?—If the cargo was thrown overboard to save the ship from perils of the sea, the merchant could not recover the value thereof. On the other hand, if the cargo was not lost, and the ship could have been repaired at a reasonable cost, the coals should have been reshipped and carried to their destination.

CHARTS, *&c., Published by the Hydrographic Office, Admiralty, to the end of August*, 1873, *and Sold by the Agent, J. D. Potter*, 31, *Poultry, and* 11, *King Street, Tower Hill.*

No.	Scale.		s.	d
524	m = 58·5	Gibraltar New Mole	1	6
777	m = 2·6 / 1·0	Caroline Islands—Mokil or Duperry, Pingalap or Macaskill, and Ngatik Islands	1	0
1062	m = 0·25	Glenelg River to Cape Otway	2	6

BOOK.

Red Sea Pilot, 2nd edition	4	6

NAVIGATING AND PILOTAGE DUTIES ON BOARD HER MAJESTY'S SHIPS.

The following Admiralty circular has been issued, providing for the appointment of officers to perform certain navigating and pilotage duties on board Her Majesty's ships :—

"My Lords Commissioners of the Admiralty, being desirous of employing a certain number of commanders, lieutenants, and sub-lieutenants to perform the navigating and pilotage duties on board Her Majesty's ships are pleased to make the following regulations :—

"1. Their Lordships propose, in the first instance, to appoint to navigating duties five lieutenants under four years' standing, and twenty sub-lieutenants. Officers of these ranks, who are desirous to obtain such appointments, are to send in the applications to the Secretary of the Admiralty.

"2. Officers whose applications are approved, will be required to pass the pilotage examination in the Hydrographical Office, Whitehall. Facilities will be afforded to lieutenants for preparing for this examination at Portsmouth, or at such other places as their lordships may from time to time determine. Sub-lieutenants will receive instruction under navigating officers of the ships in which they are serving.

"3. No lieutenant will be eligible for examination until he has completed one year's service at sea as a lieutenant, but my Lords will appoint lieutenants who apply for these appointments to sea-going ships to complete their year's sea time if necessary. Every sub-lieutenant who has elected navigation duties will, when promoted to the rank of lieutenant, be appointed to a sea-going ship to serve one year as a watch-keeping officer.

"4. Within the first five years of their service, lieutenants accepting navigating appointments will be required to go through a short course of gunnery in the *Excellent* or *Cambridge*, and in the quarterly returns of gunnery from H.M.'s ships, it will be reported whether they are competent to drill quarters, and are conversant with the rifle and sword exercises. The captains of the ships in which they serve will take care that facilities are afforded these officers for keeping up their knowledge on these subjects.

"5. Commanders holding navigating appointments will receive the pay of their rank. Lieutenants under five years' standing, and sub-lieutenants performing navigating duties when duly qualified will receive 2s. 6d. a-day in addition to their pay ; lieutenants over five years, 8s. ; lieutenants who have passed for first-class ships, 4s.

"6. Officers who have elected navigating duties will be retained on the Executive List with the letter N, or other symbol attached to their names.

"7. As it is their Lordships' intention that the navigation and pilotage of Her Majesty's ships shall be performed, under the captain's direction, by officers specially trained in those duties, such officers will not, under ordinary circumstances, be expected to share in the general duties of watchkeeping, &c. They are, however, to take the position to which their seniority may entitle them, and are not to be exempt from the performance of the duty of commanding officer in the absence of the captain or other their superior officer.

"8. On his promotion to commander, an officer who has served as lieutenant for navigating duties, and has qualified for first-class ships, may continue to perform navigating duties as commander, or will be considered for other employment with officers of his rank; and nothing in these regulations shall interfere with promotion to the higher ranks."

American Weather Signals.—The Signal Bureau of the American War Department, which transmits reports of the weather and anticipated storms, has recently extended its sphere of operations by establishing observing stations at various points in the West Indies, where many of the storms which affect the Atlantic are supposed to originate. The chief of these new stations are at Havana, Santiago de Cuba, Kingston, St. Thomas, Antigua, Guadaloupe, St. Vincent, and Barbadoes.

The New French Treaty.—According to the Treaty of Commerce and Navigation, between Great Britain and France, which was signed at Versailles on July 23rd, British ships and their cargoes in France and Algeria, and French ships and their cargoes, in the United Kingdom, from whatever place arriving, and whatever may be the place of origin or destination of their cargoes, are to be treated in every respect as national ships and their cargoes. The coasting trade, however, is excepted from the preceding stipulation, and remains subject to the respective laws of the two countries.

Clyde Shipbuilding Trade.—The shipbuilding trade on the Clyde has been of late somewhat duller than usual, in consequence of the advanced price of coal, iron, and labour affecting the demand for steam vessels. In fact, it may be said that the yards have, during the past few months, been kept going with work, which was on hand at the end of last year; for comparatively few new contracts have been closed, and the output has rapidly decreased since March, during which month the aggregate tonnage was 31,000; in April, it was 27,500; in May, 21,500; in

June, 18,000; and in July only 13,000. In March and April there was an unusually heavy output of large vessels, and, curiously enough, in spite of the recent dulness of the trade, its briskness in the early part of the year has had the effect of showing, for the seven months ending July 31st, a considerable increase in the returns over the corresponding period in any previous year.

SUEZ CANAL DUES.—The proposal that an International Commission should meet at Constantinople, to settle a standard tonnage for ships, which shall regulate the Suez Canal dues, has been agreed to by the Maritime Powers. The Porte has accordingly invited those Powers each to send one or two delegates to Constantinople, and it is expected that the conference will be opened there about the middle of this month.

RUSSIAN CIRCULAR IRONCLAD.—The *Novgorod*, the extraordinary vessel, designed by Admiral Popoff, for the Russian Navy, being now ready for sea, is attracting some attention among naval architects. She is perfectly circular in plan, with a flat bottom—in short, she is just like a cheese—with a central circular turret, carrying two eleven-inch breech-loading guns. She has twelve keels, which run parallel to the fore and aft diameter, and is propelled by six screws, driven by six pairs of compound engines. The armour, both on her sides and turret, is composed of two layers of iron, the outer nine inches, and the inner seven inches thick. The deck is of iron, two and three-quarter inches thick. The turret can be rotated in either direction, and is fitted with an apparatus for firing torpedoes. On a recent trial trip the *Novgorod* behaved well in a tolerable sea-way, and it has been found that she can be turned almost on her centre, first one way and then the other, by means of her engines.

THE "POLARIS" EXPEDITION.—Dr. Petermann, the eminent German geographer, has written to Dr. Strasnecky, secretary of the American Geographical Society, stating that he considers the geographical results of the *Polaris* expedition to be of "extraordinary value," and, in fact, the most important that any vessel, among the numerous expeditions of all nations to the artic and antarctic regions, have accomplished for many centuries. For, not only did the *Polaris* go in the first spring she was out, and without much trouble, as far as 82° 10′ north latitude—that is further than any previous vessel reached land—but the most interesting and valuable observations of all kinds have been made. Dr. Petermann, in view of the important results now likely to accrue from polar exploration, regrets that "the civilized Governments of the world devote their millions principally to the increase of their armies," and that "scientific objects figure only in their budgets for the crumbs."

PERSIAN TRADE.—It seems that the export trade of Persia wants deve-

loping. Silk, shawls, carpets, dyed calicoes, dried leather, galls, safflower, tallow, drugs and dyes, fox and marten skins, dried fruits, &c., &c., are products of the country, which only require to be carried to market to find a ready sale. But unfortunately the distances to be traversed are so great and the present mode of transport so tardy and expensive that no Persian goods can, under such circumstances, be favourably offered in European markets. The Shah, probably, has gone back to his land with more extensive views concerning the development of trade. The concession to Baron Reuter is a great move in the right direction, therefore we would suggest to some of our great carrying firms that they should keep their eyes open and take advantage of the probable opening of a considerable trade with Persia.

Ocean Steam Racing.—The Shanghai Chamber of Commerce has addressed a letter to the Hankow Chamber of Commerce, on the subject of races between seagoing steamers. The occasion of this communication is the loss on the Chinsan Islands, of the steamer *Drummond Castle*, bound from Hankow to London, with a cargo of the new season's tea, which disaster was attributed by the Court of Inquiry to "the recklessness of the master in having driven his vessel at full speed, during a thick night, in an intricate channel." The chamber observes that an ocean steam race benefits no one; on the contrary, it is injurious to the shipowner by causing an unnecessary expenditure of fuel, while it endangers the safety of his vessel and the lives of those on board. It is hazardous to the underwriter, who, but for the necessities of competition, would properly impose on the steamers engaged in it an additional rate of premium. It leads the shipper into hasty speculations in produce, which depend for their success on the chance of some particular parcel being the first to arrive in the consuming market. The Shanghai Committee cannot hope that the practice of steam racing will be entirely abandoned, but hope that its evils may, at least, be mitigated by the joint action of Chambers of Commerce. They also suggest that representations be made to the various Ocean Steam Lines respecting the impropriety of risking the safety of their vessels by offering premiums for mere speed, as some of them are understood to do.

A New Harbour in New Guinea.—H.M.S. *Basilisk*, Captain Moresby, while cruising in Torres Straits and neighbourhood for the suppression of the Polynesian labour traffic, has added a valuable fact to the knowledge we possessed of the geography of New Guinea by the discovery of a new port and harbour in lat. 9° 30′ S., long., 147° 10′ E., about 38 miles east of Redscar Bay, on the south-eastern coast. The discovery was made in February, when Captain Moresby, while searching for a river supposed to flow into the sea east of Redscar Bay, entered an inlet which proved to be the entrance to a magnificent harbour, with an outer and

inner anchorage to which the names of Port Moresby, and Fairfax Harbour have been given. The natives are much lighter complexioned than those of the opposite coast, and are evidently of a much more friendly disposition.

VARIATION IN BORDA'S METHOD OF CLEARING THE LUNAR DISTANCE.

In the explanation of the tables relating to the three-hourly Lunar Distances in the "French Nautical Almanac" (Connaissance des Temps), there has been worked out for the benefit of mariners a Lunar by Borda's method, which contains at the end a few steps I have not met with in any English work on navigation. As many of your readers are interested in the Lunar Problem, I have thought it possible they would like to see this peculiarity, and its comparison with the ordinary method.

The following data are given:—App. Dist., 88° 57′ 34″; ⊙ App. Alt., 48° 27′ 30″; ☽ App. Alt., 27° 34′ 0″; ⊙ True Alt., 48° 26′ 39″; ☽ True Alt., 28° 20′ 27″.

FRENCH METHOD.

App. Dist.	88° 57′ 34″			
☽ App. Alt.	27 34 0	L. Sec.	10·052885	
⊙ ,, ,,	48 27 30	Log.	120*	
Sum	159 59 4			
½ ,,	79 59 32	L. Cos.	9·240004	
App. Dist. − ½ Sum	3 58 2	L. Cos.	9·998958	
☽ True Alt.	28 20 27	L. Cos.	9·944551	
⊙ ,, ,,	48 26 39		19·235968	
Sum	76 47 6		9·617984	9·723798 =
½ ,,	38 23 33	L. Cos.	9·894191	L. Sin. Aux. Angle
Aux. Angle	31 57 56	L. Cos.	9·928583	
½ True Dist.	41 40 36	L. Sin.	9·822774	
True Dist.	83 21 12			

ORDINARY METHOD.

App. Dist.	83° 57′ 34″		
☽ App. Alt.	27 34 0	L. Sec.	10·052335
⊙ ,, ,,	48 27 30	Log.	120*
Sum	159 59 4		
½ ,,	79 59 32	L. Cos.	9·240004
App. Dist. − ½ Sum	3 58 2	L. Cos.	9·998958
☽ True Alt.	28 20 27	L. Cos.	9·944551
⊙ ,, ,,	48 26 39		19·235968
Sum	76 47 6		
½ ,,	38 23 33		
Aux. Angle	24 30 56	L. Sin.	9·617984
Sum	62 54 29	L. Cos.	9·658412
Diff.	13 52 37	L. Cos.	9·987135
True Dist.	83 21 12	L. Sin. Sq.	9·645547

The two methods are the same until we have found the half Sum of the first set of Logs. In the ordinary method we get an Auxiliary Angle at once, and apply it according to the formula to the half Sum of the True Altitudes. In the French method the Log. Cosine of the half Sum of the True Altitudes is subtracted from the half Sum of the Logs., giving the Log. Sine of an Auxiliary Angle. The Log. Cosine of this Auxiliary Angle, added to the Log. Cosine of half the Sum of the True Altitudes, gives the Log. Sine of half the True Distance.

No investigation of the formula used is given in the Almanac. I shall therefore take the ordinary formula, and deduce the French formula from it.

Let A represent the Aux. Angle in the Ordinary Method.
,, B ,, ,, ,, French ,,
,, M ,, Moon's True Altitude.
,, S ,, Sun's ,,
,, D ,, True Distance.

* The Log. ⊙ App. Alt. is taken from the French Almanac, and is computed from the formula $\frac{\text{Cos. } \odot \text{ True Alt.}}{\text{Cos. } \odot \text{ App. Alt.}}$ This table is given to 7 places of decimals, and can be corrected for height of the Barometer and Thermometer.

$$\text{then Sin.}\frac{D}{2} = \sqrt{\text{Cos.}\{\tfrac{1}{2}(M+S)+A\}.\ \text{Cos.}\{\tfrac{1}{2}(M+S)-A\}}$$

$$= \sqrt{\text{Cos.}^2\tfrac{1}{2}(M+S).\ -\ \text{Sin.}^2 A}$$

$$= \text{Cos.}\tfrac{1}{2}(M+S)\sqrt{1-\frac{\text{Sin.}^2 A}{\text{Cos.}^2\frac{1}{2}(M+S)}}$$

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W. H. BOLT.

Nautical Academy, 4, New London Street, E.C.

[We are indebted to our esteemed correspondent for sending us this variation in the method of clearing the Lunar distance. We do not see that there is any practical advantage in this as compared with the ordinary method, nor does Mr. Bolt, himself, claim any superiority for the French method, but as an interesting contribution to the literature of the subject, and for comparison with the ordinary method by those of our readers who are interested in the Lunar problem, we are glad to publish such a paper as the above, especially when sent to us by so careful a mathematician as Mr. Bolt.—Ed. *N. M.*]

SAFETY-VALVE COMPETITION.

The time for sending in Safety-Valves for Competition has been extended to 30th October. See directions as to packing, fitting, marking and delivering in our number for August last.

We regret to announce the death of Captain Richard Hoskyn, R.N., Superintendent of Charts at the Hydrographic Office, Admiralty. Captain Hoskyn had been connected with the Surveying Service for many years, and had held the position of Superintendent of Charts for nearly ten years. He was an able and zealous officer in the discharge of his duties, and his loss will be much felt by the service, as it will by a numerous body of friends, by whom he was much esteemed for his great kindliness of heart and singleness of mind.

THE

NAUTICAL MAGAZINE.

NEW SERIES.

OCTOBER, 1873.

REGULATIONS UNDER THE MERCHANT SHIPPING ACTS.

THE correspondence addressed to us on the subject of the new Merchant Shipping Acts this month is very voluminous; so voluminous, indeed, that if we were to insert the letters received and to answer them *seriatim*, we should more than fill the whole of the pages of the *Nautical* for the month. We have, therefore, with one exception, thought it wise not to print any letters on this subject; but, instead, to string together, as our first article for the month, such a comprehensive statement, as will enable our questioners to answer, not only their own questions, but others also. This proceeding, on our part, will, we trust, furnish an opening article not unwelcome to our large body of subscribers, at the present time: a time at which a knowledge of the Acts is of paramount importance. The present article is not as a whole consecutive, nor is it arranged with a view to argument or literary effect. The reason is obvious:—A task is set before us of answering questions that are in themselves often rambling, and put to us without any order or arrangement. With this preface we plunge amongst our letters, which we have previously arranged in groups, as nearly as possible according to the headings of the new Act:—

Surveyor's Duties.—As regards the surveyor's duties, a question is put which we have answered to the best of our ability, in the present number, under the heading of correspondence. To that letter we must refer our questioners for a general answer. There are two questions, however,

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as to machinery and equipment, which we answer as follows:—It is the surveyor's duty to limit the pressure to what he thinks is a safe and proper one. The pressure on flat-sided boilers is so regulated by surveyors that the stays shall not be subject to a greater pressure than 5,000 lbs. to the square inch of effective sectional area: and the working or safe pressure allowed, is one-eighth of the ultimate bursting strain of the boiler. The pressure on circular boilers is calculated by a rule known as "Galloway's rule," and for perfection of workmanship, design, and material, a nominal factor of 6·5 is used. This nominal factor is raised in many cases; as, for instance, where the surveyor has not seen the boilers before they are put into the ship, and for reasons which we hope to enter into fully at an early moment. *Caution:* do not go to extravagant pressures, without first submitting plans.

Board of Trade Circulars.—As regards the power of the Board of Trade to issue circulars, we must refer our readers to the answer we have addressed to Messrs. Earle's Shipbuilding Company, which appears under "Correspondence." We have endeavoured to frame it to the best of our ability. We may here add that in addition to what is there stated, we find on reference to the Merchant Shipping Acts, that "all duties in relation to the survey and measurement of ships," under those Acts, are to be "performed in accordance with such regulations as may be from time to time issued by the Board of Trade."

As regards Unseaworthy Ships.—Under the 11th Section of the Act of 1871 it is the duty of owners to make *and* to keep their ships seaworthy. If they do not comply with this section, and if their ships are stopped even after they are loaded, and are found to be unseaworthy, it appears to us that the owners have no cause of complaint for the consequent expenses and losses occasioned by detention. The owner's only complaint can be that he is found out; but then he ought previously to have made his ship seaworthy and loaded her properly, and there could have been nothing to find out.

As regards Overloading and Deficient Equipments.—The 12th Section of the Act of 1873 empowers the Board of Trade to detain overloaded ships under certain circumstances, and also to detain ships in which the equipments are defective. Here again the owners will have no cause of complaint againgst anyone but themselves, if their ships are detained for overloading or inefficient boats. It is doubtless very inconvenient to a shipowner to have his ship stopped at an intermediate or distant port, just because some humanitarian agent reports that the boats are defective; but here again we must point out to owners that the way to escape detention is to send the ship and her boats and equipments to sea in a seaworthy state. The matter is really entirely in the hands of the shipowner, and he need fear no detention and no

interference or humanitarian tomfoolery so long as he fulfils his legal obligations. How much better this is than would be the detaining every ship for a survey every voyage, we leave shipowners and sailors to judge.

As regards Detention for Unseaworthiness.—So far as we have been able to ascertain, the Board of Trade practice is not to detain a loaded coasting ship alleged to be unseaworthy if the crew are willing to go to sea in her, and if the master or owner agrees to submit her to inspection at her port of unloading.

As regards the Powers of Officers Surveying Unseaworthy Ships.—The surveyors have, under Section 12 of the Act of 1873, all the powers of inspectors under the first part of the Act of 1854. These powers are very large, and, amongst other things, include power to give into immediate custody persons "wilfully impeding," whether on board ship or elsewhere. The Board of Trade have, by circulars, limited this power; but, whether it is limited or not, the inspectors have it, and contumacious persons, of whom a correspondent is certainly one, had better take the hint. If he interferes and is convicted, it will afford us immense gratification to put him under the microscope. We think that Board of Trade surveyors have enough to do without being subjected to annoyance by him.

Compensation to Seamen.—Under the 9th Section of the Act of 1873, seamen "detained" on a charge of desertion, or for any "kindred offence," are entitled to compensation if it should be found, on survey, that the ship is not in a "fit condition" to go to sea, or that the accommodation for the seamen is "insufficient." We strongly urge the attention of masters of ships to this very wide enactment, and advise them to keep in mind the provisions of the Duke of Richmond's Act, which also impose a penalty of a shilling a day, payable to each seaman, when stores or cargo are put into the crew space, or when it is not kept watertight, lighted, ventilated, &c., &c. Here, again, the only way to be safe is for the owner or master to see that after and before every voyage, the "crew space" is cleaned out and is habitable, and is of the size required by the statute for the number of men carried. Considering that owners obtain a reduction from register tonnage, on account of the space in their ships set apart for the crew, and that this reduction (which is accompanied by a reduction of dues) is granted on the understanding that the law is complied with, and space kept clear for "poor Jack" (the reader will observe that this epithet is a quotation), it is not too much to claim in return for these advantages that the owner depute some one to take care to ascertain as a fact that the law is complied with, and that cargo, passengers, or stores, are not carried in the crew space. We know of no other way by which owners can hope to escape endless litigation with seamen.

As regards Draft of Water.—The master, or any other person in charge of a ship, is bound, under a penalty of £5, to give the "recording angel" every facility. The word angel is used in its proper sense of "messenger."

As regards the Names of Ships.—Foreign ships coming on the British register for the first time must come on with their foreign names, unless, by license, the Board of Trade authorise a change.

Costs of Survey, &c., of Unseaworthy Ships.—There are a few words in Sections 12 and 13 of the Act of 1873, that appear to be worthy of comment. They are like some people, said by Mr. Plimsoll to be in the Board of Trade, much more innocent than they look. They look very innocent; but there is, we think, a very great deal more in them than at first sight appears. Section 13 provides that where a ship is found to be unseaworthy, the expenses, &c., may be recoverable by the Board of Trade in the "same way as salvage is recoverable." This means, when properly interpreted, that the Board of Trade may detain, and sell the ship for payment (!!!) Section 12 provides that "when a ship has been detained under this section she shall not be released by reason of the British registry being closed." This means, when interpreted, that foreign shipowners will no longer have power to sail away with any unseaworthy British ship they may have purchased as a speculation from a British shipowner. The contrary was the case a little while ago, as was proved, at Cardiff: we refer to the case of the *Huntress*.

Compensation to Owners.—We are glad to see that owners are to be compensated in the event of loss incurred through complaints of unseaworthiness when made "without reasonable cause;" and we are further glad to see that this compensation is to come out of "monies voted by Parliament." The poor Briton paying taxes may contribute towards detaining the ship of the wealthy shipowner. The British taxpayer having to find the money, his representatives in Parliament will, we strongly hope, raise a fierce discussion when payment is asked for. It is not to be expected that the humanitarian mania will last for ever, and when, in the outside world, reason again takes the place of clamour, interferences with commerce will, let us hope, be carefully reviewed.

Foreign Ports of Registry.—The 29th section enables Her Majesty, by Order in Council, to set up or constitute foreign ports of registry in certain places, such, for instance, as at Hong Kong, Shanghai, &c. This will be a great boon to shipping.

Infringement of Regulations as to Lights and Steering and Sailing Rules.—Our readers will recollect that in the case of the "*Bougainville v.* the *J. C. Stevenson*," the French ship carried her lights in such a manner that they could not comply with the regulations, and yet

the Court of Appeal held the English ship alone to blame. The excuse for the French ship was that she carried her lights in the way that many other French ships do!! That is to say, because many ships disobey the regulations, any one of them getting into collision through disobeying them is to be held blameless. This is a startling proposition. If it could be maintained it would be well for the majority of ships to agree to set the regulations at defiance in order to free all ships from any obligations under them. The care of those owners who by anxious watchfulness take means to ensure compliance with the regulations would be thrown away. By Section 13 of the Act of 1873, however, the first inquiry in the Admiralty Court in cases of collision will be, "Which of the ships complied with the regulations?" and "Which did not?" And the first point thereupon to be established is to be established by the defaulting vessel to the satisfaction of the Court—viz., that the circumstances of the case made a departure from the rule necessary. The possession by an owner or master of a certificate from a surveyor that his lights were fitted in accordance with the regulations and complied with them would be one step towards security. The next points to establish are, attention on the part of the officer of the watch—first, in seeing that the lights were burning and at their *full* power (not with wicks a quarter of the size of those intended to be used when the lights were certified ashore); and, secondly, in obeying the Rule of the Road as it exists, heedless of vague and crude opinions as to what agitators think they think the rule ought to be.

Boats, Rafts, &c.—As far as we have been able to ascertain, the present scale of boats in the Merchant Shipping Act, 1854, is to be regarded as a maximum scale, which may be reduced or varied when but few persons are carried. In answer to a question put to us, "How am I to go about *compelling* owners to adopt my raft?" we reply that if any inventor or owner wishes rafts to be substituted for boats, he will, we presume, have to submit his proposals to the President of the Board of Trade.

Lifebelts.—In reply to a question as to lifebelts and lifebuoys, if what our correspondent states is correct, there must have been a misprint in the notice he saw. The notice we have distinctly states that life*buoys* (cork) are to sustain a weight of solid iron of 32 lbs. for twenty-four hours, and that life*belts* for lifeboats are to be capable of sustaining 28½ lbs. for the same time. This, however, clearly does not take effect in any case where a ship and fittings have been passed before the 1st January, 1874, unless the buoys, boats, and belts are renewed.

Lifeboats.—In the same way lifeboats supplied after the 1st of January, 1874, are to be double-bowed boats, all existing boats and fittings once

passed will clearly be left alone until the time comes for replacing or renewing them. We cannot agree with our correspondent that any fittings, or boats, or belts now passed are to be condemned, we understand that new things only are to come up to the new standard.

The above will, we trust, answer questions that have been put to us respecting such of the provisions of the Act as took effect from the 5th August last. As regards questions relative to provisions that take effect on the 1st of November next, we have to reply under the various headings as follows:—

Duties of Masters in Case of Collision.—The new law, Section 16, is very stringent. It provides that in every case of collision between two vessels, it shall be the duty of the master, or other person in charge of each vessel, if, and so far as he can do so without danger to his own vessel, crew and passengers (if any), to stay by the other vessel *until* (note the new words) "*he* HAS ASCERTAINED *that she has* NO NEED *of further assistance.*" Failure to comply involves (1) all the consequences attaching to wrongful default under the provisions of the Merchant Shipping Acts 1854 and 1862; (2) punishment as for a misdemeanour; and (3) suspension or cancellation of certificate. A master is no longer to sail away under the "belief" that the other ship did not require assistance. On the contrary, he is not to leave her until he *has* ascertained, that *she does not require assistance.* The only way out of the serious consequences attaching to masters of ships by this section is for them, without regard to any other circumstances or consequences to themselves, to comply with the law. This clause applies to foreign ships within British territorial jurisdiction, and there is, we have reason to believe, every probability that foreign nations will come to a mutual understanding on the point.

Signals—Distress and Pilot.—In the *Nautical* for September, these signals are given at length. All we have now to remark is that owners and masters cannot enforce instructions too stringent against the unnecessary firing of guns, and the letting off of fireworks! Spare rockets, if they cannot be taken into port, had better now be thrown into the sea; certainly they had better not be fired off, for if they are, a claim for salvage will be set up which the owners cannot well resist. Yachtsmen, and other jubilants at sea, will also do well to keep their desire for displays of fireworks within the means of their purses, as the luxury has now become very expensive. The guns and rockets to be passed by surveyors, and to be declared by them to be "sufficient for the service intended," are 24-pounder mortars, or 6 lb. cannons, each firing 16 oz. of powder (the ordinary saluting charge), and twelve rockets, the composition in each weighing 16 oz., without case or stick. We may remark that these signals are international.

Private Signals.—Many large steam companies have private firework signals of their own: after the 1st of November, these private signals may be acted on as signals of distress (boatmen, steamtug masters, salvors, loafers, and others, desirous of earning an honest penny, will not omit to notice this), unless they are registered at the Board of Trade, and properly advertised. We would recommend our readers who indulge in the luxury of private signals, to lose no time in the matter of registration.

Notice of Loss.—Every owner, whether of a sailing or steamship, is now required to send notice of loss or apprehended loss of his ship to the Board of Trade. This only formerly applied to steamships. The penalty for neglect of this new obligation is £50. The term "apprehended loss" does not include ships whose loss is apprehended before they are sent to sea, but only applies to such ships as have been so long in arriving at their destination, that it is only reasonable to apprehend that they are lost. We explain the meaning of "apprehended loss," lest persons interested in cases like the *Poseidon*, and *James*, and *Severn*, might report their apprehensions too soon.

Withdrawing Screw Shafts.—Our correspondent is needlessly alarmed at a recent circular. He may take it for granted that the Board of Trade surveyor would never require a screw-shaft to be withdrawn on every annual survey, and if he did that the process of withdrawal would be hinted to him. The surveyors can, doubtless, require a screw-shaft to be withdrawn at any survey, if they have good reasons for doing so; but neither the surveyors nor anyone else would withdraw a screw-shaft, or order it to be withdrawn, for mere diversion.

In concluding our remarks, we wish to call the attention of our reader to the contents of our monthly "Official Log." In no magazine is so much care taken to keep subscribers *au courant*. We find as a rule that our subscribers and correspondents in foreign bureaus and departments connected with shipping are exceedingly well posted, while some of our subscribers at home are comparatively in the dark. If subscribers would but refer to "Our Official Log," *their* official log, monthly, they would, we feel, save themselves (we do not care about *our*selves) much correspondence, no little trouble, and probably some money.

We would advise our subscribers to secure an early copy of the report of, and evidence given before, the Royal Commission on Shipping. It can be ordered through our Agents.

SUEZ CANAL DUES.

ALL books written by travellers in Egypt and the Holy Land contain astounding records of feats, jugglery, and sleight of hand, performed in those countries. As the Suez Canal is, we have heard, and "have reason to believe," situated somewhere between Egypt and the Holy Land, we are not surprised to find that gentlemen connected with that undertaking, in itself marvellous, are able to perform a little jugglery when occasion seems to require it. There is, be it distinctly understood, no insinuation of dishonesty, no roguery, and no villany. "Smartness" is the word now applicable. Instead of manipulating snakes, swords, and daggers, the modern Egyptians and their *confrères* manipulate ships and figures. Whilst everything is honest and above board, every question arising out of the Canal seems to have, what sailors call, a "kink" in it. The Yankee word "slantindicular" is perhaps the best word to apply to it. It implies no dishonesty, no impropriety, not even any questionable conduct, but merely means slantindicular as compared with perpendicular. Now, slantindicularity has from the first been associated with the Canal.

First of all it was British shipowners distinctly believed that the dues should be levied on the register tonnage of their ships, and this led to the building of steamships for the Canal trade, that are not of much use for any other trade; but in this some shipowners, and, be it understood, we by no means mean shipowners of our own country, built steamers in which there was a slantindicularity about the register tonnage. It is a well known fact that, owing to "exemptions," in some cases, the register tonnage, as recorded in the national papers, was by no means inclusive of all the space that could be made available for cargo. In fact, the ships so constructed carried cargo in such quantities that the official register tonnage was nowhere compared with the real (register) tonnage of the ship. This was a source of great annoyance and much speculation on the part of the owners of other ships, and on the part of the directors of the Canal. It was solely owing to our defective rules.

The Canal Company, in time, wanted to raise their dues, and this slantindicularity of recorded register tonnage first gave them a handle. The Company, after careful deliberation, came to the conclusion that the tonnage on which ships were to be charged was not the net register tonnage, and was not the gross register tonnage, but was a "tonneau de capacité." A ton of capacity was a fancy ton of their own creation. They had good grounds for being dissatisfied with the net register tonnage, for, in the case of steamers it is no measure of any capacity. They had no right to adopt the gross register tonnage, because British

shipowners had been led to believe that the charge would be made in the net register ton. Now, all the world knows that a ton gross is not a measure of weight at all, but is a unit of space. It means neither more nor less than 100 cubic feet of clear space in a ship.

The Canal Company commenced juggle number one, by adopting what they call a ton of "capacité;" they distinctly repudiated the gross ton, and arrived at their "capacité" as follows (see page 791 of our volume for 1872):—The gross tonnage of a ship being 2,000; but as this meant space, and did not mean weight, the fallacy was introduced that it meant weight, and did not mean space. To convert it into "capacité," therefore, *i.e.*, "capacité" for weight, the Canal Company added 30 per cent. to it, which, by some marvellous calculation, they imagined converted the gross ton of space in a ton "capacité" for weight; therefore, 2,000+666=2,666 tonnage of "capacité." Then, to show that they were liberal, and did not want to charge for engine-room, they deducted one-fourth of the whole—thus, 2,666−666=2,000 tonnage "de capacité"—and they charged on 2,000 tons, which thickheaded Englishmen can only regard as the gross tonnage; and, as at the same time, they charged 10 francs per ton, the fact remains that, whatever ingenuity may be displayed in arriving at the result, however honest and learned it may be, the charge has been shifted from the net to the gross tonnage. We believe that there has been no dishonesty in the matter, and that the whole difficulty has been brought about by the extremely vague terms, "ton," "gross ton," "register ton," "ton of capacity," "utilizable ton." Still, altogether it is a very pretty juggle.

The case, as we have above sketched it, may be taken as the case before the recent decision of the Sultan. That decision, as we take it, is, that for the present and pending the decision of the International Commission now assembled at Constantinople, the register ton was to be reverted to as heretofore. This would, however, not appear to be the opinion of the English Resident Director of the Suez Canal Company, whose letter to the *Times*, of the 6th September, is as follows:—

"Sir,—As there appear to exist considerable doubts and misapprehensions generally with respect to the question of the Suez Canal tonnage dues, will you permit me to endeavour to remove them by the following brief observations?

"His Imperial Majesty the Sultan of Turkey, having declared that the levying of the Suez Canal dues shall be based on the utilizable capacity of the ship, irrespective of any tonnage mentioned in the official papers on board, and further expressed the opinion that Moorsom's rule is that which states with the greatest accuracy the net utilizable capacity of a ship, the President of the Suez Canal Company has on his

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The Canal Company, in time, wanted to raise their dues, and this slantindicularity of recorded register tonnage first gave them a handle. The Company, after careful deliberation, came to the conclusion that the tonnage on which ships were to be charged was not the net register tonnage, and was not the gross register tonnage, but was a "tonneau de capacité." A ton of capacity was a fancy ton of their own creation. They had good grounds for being dissatisfied with the net register tonnage, for, in the case of steamers it is no measure of any capacity. They had no right to adopt the gross register tonnage, because British

shipowners had been led to believe that the charge would be made in the net register ton. Now, all the world knows that a ton gross is not a measure of weight at all, but is a unit of space. It means neither more nor less than 100 cubic feet of clear space in a ship.

The Canal Company commenced juggle number one, by adopting what they call a ton of "capacité;" they distinctly repudiated the gross ton, and arrived at their "capacité" as follows (see page 791 of our volume for 1872):—The gross tonnage of a ship being 2,000; but as this meant space, and did not mean weight, the fallacy was introduced that it meant weight, and did not mean space. To convert it into "capacité," therefore, *i.e.*, "capacité" for weight, the Canal Company added 30 per cent. to it, which, by some marvellous calculation, they imagined converted the gross ton of space in a ton "capacité" for weight; therefore, 2,000+666=2,666 tonnage of "capacité." Then, to show that they were liberal, and did not want to charge for engine-room, they deducted one-fourth of the whole—thus, 2,666−666=2,000 tonnage "de capacité"—and they charged on 2,000 tons, which thickheaded Englishmen can only regard as the gross tonnage; and, as at the same time, they charged 10 francs per ton, the fact remains that, whatever ingenuity may be displayed in arriving at the result, however honest and learned it may be, the charge has been shifted from the net to the gross tonnage. We believe that there has been no dishonesty in the matter, and that the whole difficulty has been brought about by the extremely vague terms, "ton," "gross ton," "register ton," "ton of capacity," "utilizable ton." Still, altogether it is a very pretty juggle.

The case, as we have above sketched it, may be taken as the case before the recent decision of the Sultan. That decision, as we take it, is, that for the present and pending the decision of the International Commission now assembled at Constantinople, the register ton was to be reverted to as heretofore. This would, however, not appear to be the opinion of the English Resident Director of the Suez Canal Company, whose letter to the *Times*, of the 6th September, is as follows:—

"Sir,—As there appear to exist considerable doubts and misapprehensions generally with respect to the question of the Suez Canal tonnage dues, will you permit me to endeavour to remove them by the following brief observations?

"His Imperial Majesty the Sultan of Turkey, having declared that the levying of the Suez Canal dues shall be based on the utilizable capacity of the ship, irrespective of any tonnage mentioned in the official papers on board, and further expressed the opinion that Moorsom's rule is that which states with the greatest accuracy the net utilizable capacity of a ship, the President of the Suez Canal Company has on his

part declared himself satisfied therewith, observing however, that the rigorous application of Moorsom's rule would, if anything, result in an increase of the present traffic receipts from ships passing through the Suez Canal.

"It may be asked what is Moorsom's rule? In reply it will be sufficient to reproduce textually the rule as set forth by Moorsom, which purposes to arrive at the real net utilizable capacity of ships. It is as follows:—

"'To find the number of tons of export measurement goods of 40 cubic feet to the ton, which a vessel is enabled to take or stow, it is only to divide the above number of cubic feet by 40, having first made the proper deduction due to the spaces which may be occupied by the crew, store-rooms, provisions and water, pump-well, beams, &c.; which, on the whole, may, practically speaking, be estimated to amount to about 20 per cent., or one-fifth of the whole cubic content under the tonnage deck. For example, the register tonnage under the tonnage deck being, as before, 619 tons, the cubic content of the hold is 61,900 cubic feet, and $61{,}900 - \frac{61900}{5} = 49{,}520$ net cubic content, and $\frac{49520}{40} = 1{,}238$ tons, the quantity of export measurement goods that can be stowed. Or, in the case of import goods, at 50 cubic feet to the ton, we have $\frac{49520}{50} = 990$ tons.'

"Such is Moorsom's rule, which purposes to determine accurately the net tonnage, or real utilizable capacity of a ship.

"It follows that a vessel of 619 tons, official English register, can take, or is capable of carrying (taking the most advantageous ton for the shipowner: viz., 50 cubic feet) 990 tons of utilizable net tonnage capacity. If this supposed vessel, of 619 tons official English register, passed through the Canal, the dues would, in conformity with the navigation rules, be levied on 928½ tons.

"Consequently, the tonnage on which the dues of the Suez Canal Company is levied, is actually inferior to the tonnage which would result from a rigorous application of Moorsom's rule, which determines the utilizable capacity of the ship.

"It will, therefore, be seen that, in acknowledging the rights of the shareholders, as stated in the Charter of Concession, the Court of Appeal in Paris were justified in condemning the pretensions of the Messageries Maritimes Steam Navigation Company, and perfectly warranted in assuming that the Suez Canal Company have not exceeded their just

rights in establishing the 'Navigation Rules' of the 4th of March, 1872, and levying the dues in conformity with such regulations.

"I have the honour to be, Sir,
"Your most obedient servant,
"DANIEL A. LANGE, English Resident Director of the
"Suez Canal Company.

"London, September 5."

The above letter introduces another reading, which, while it may be accepted by the outer world will fall flat on the readers of the *Nautical*. Sir D. A. Lange's letter is another interesting fallacy, but it is nothing more, and is completely answered by the context in Moorsom's book. It is a pity that Sir D. A. Lange did not quote the whole passage; but, as he has not, we do it for him.

In putting his system before his readers, and after having explained that the tonnage resulting from his system must afford an immediate and just knowledge of the capacities or sizes of all vessels, whatever be their form, Moorsom distinctly states what follows:—

"The tonnage so ascertained is simply a cubical tonnage of the internal cubical capacity, in which every ton of tonnage represents 100 cubic feet of space, so that if by this process one vessel measures 500 tons, for instance, and another measures 1,000 tons, it is known to a certainty that the latter vessel has double the cubical capacity of the former; for, in each case, every ton of tonnage contains exactly 100 cubic feet of space.

"Hence, if register tonnage were thus constituted, it would always immediately convey to the mind a just idea of the exact, as well as the relative sizes or capacities of all vessels of which we have but a very imperfect criterion in the register tonnage of the present day.

"Having thus at length given such illustration and examples as appeared to be necessary to prove the correctness of the process and show the mode of its application to those parts of vessels which may require to be measured, there now only remains to describe those essential qualifications alluded to in the preliminary observations at the commencement of this section, which the plan, mainly from its capabilities of correct mensuration, possesses, and which are held to be requisite in any system eligible for the admeasurement of the merchant shipping of this country. These qualifications are summarily enumerated as follows:—

"1. The evasion of lawful tonnage is prevented. This is accomplished by the number and position of the prescribed measurements: these may be considered rather numerous for a practical operation, but

on this point it is to be borne in mind that it has been found necessary to employ a multiplicity of measurements to insure the effectual prevention by ingenious constructors of so altering the forms of vessels between the measurements as to evade thereby a just expression of the tonnage, which is easily effected when the measurements are few, as indisputably proved by the working of the former and present laws.

"2. All inducement to the construction of ill-formed vessels is removed. This is effected by the prescribed measurements reaching every peculiarity of form which can be devised of the least importance as affecting the capacity, whereas under the operation of the rules hitherto established it is only necessary, in consequence of the position and paucity of their measurements, to increase unduly those dimensions which are unaffected by the law, and an excess of capacity is attained without detriment to the register tonnage, while at the same time the sailing and seaworthy qualities of the vessel may be thereby seriously compromised, and thus shipowners are oftentimes induced to sacrifice their real interests for at the very best a very problematical advantage.

"As, however, by the mode now proposed no such advantage as capacity independent of register tonnage is attainable, there will be no longer any inducement to give other forms to vessels than those tending best to develop the maximum advantage to be derived by a judicious blending of their sailing and carrying requirements, an achievement in naval construction essential to the prosperity of British shipping now under the climax of unlimited competition.

"3. A just and true relative expression of register tonnage in proportion to capacity is effected, whatever may be the nature of the materials used in the building, or whatever the form of the vessel may be. This important desideratum is assured by the great degree of accuracy which the system affords in ascertaining the true capacities of vessels. This degree of accuracy is proved independent of the examples to this effect in Article 3 of this section, by the application of the process to the ascertaining of the displacement of the *Espiégle*, Her Majesty's brig of war, of twelve guns, and 439 tons old measurement (Chap. 5, Sect. 1) where it is seen by the results compared with the true displacement as calculated by the late Committee for designing ships of war, that correct mensuration is arrived at within about $\frac{1}{2}$ per cent., thus most satisfactorily proving that the system, considered as a practical operation, consisting only of a series of simple internal measurements, unaided by diagrams of any description, affords highly accurate results.

"4. Wrong measurement, whether by design or accident, will at any time be detected. This is derived from the innate properties of the plan, and is accomplished by means of the formula used in the operation of measurement, which is always to be lodged with the proper authorities

by the measuring surveyor. By means of this formula detective curves can at any time be easily and quickly constructed, showing where any error, if any of material importance, has been introduced. Whereas, under the existing law, in consequence of the uniform nature of its construction (Sect. 5, Art. 4) no means whatever can be resorted to except by remeasurement for the discovery either of a fraud or accident, so that false measurements or errors once introduced may involve serious permanent injuries.

"5. The aggregate tonnage of the Kingdom to be derived from the process approximates, as near as may be, by means of the divisor 100, to the aggregate tonnage prescribed by the old law. Every inquiry into the question instituted by Government having established that any eligible rule for the admeasurement of the merchant shipping of this country should produce the same aggregate tonnage as that derived from the old law, at the same time justly distributing it between ship and ship in proportion to their true capacities; this point being considered necessary by the derangement that would otherwise ensue in regard to the various revenues which have been based by Acts of Parliament on the amount of that tonnage, and in order also to preserve in continuity for statistical purposes the official index of the increase or decrease of British mercantile shipping. To fulfil these objects, so generally called for, it was necessary to find a factor which, when applied to the true aggregate capacity of the merchant navy, would elicit therefrom the aggregate tonnage of the Kingdom as derived from the old law. This essential point is accomplished as near as may be (with 1·78 per cent.) by the employment of the divisor 100, the method of arriving at which is given at length in Chap. 3, Sect. 1.

"The aggregate tonnage, as prescribed by the old law, has been taken as the standard for this purpose rather than that which would be derived from the new measurement, because the aggregate tonnage of the Kingdom under the latter has never yet been ascertained; the present statistical tonnage being made up partly from the results of both laws as derived from the existing registers of vessels. Moreover, as it was the intention of the framers of the new measurement that its aggregate tonnage should be the same as that of the old law, to have taken the former as the regulating datum would have been gratuitously to involve its errors in our calculations.

"Besides the advantage of leaving undisturbed all existing contracts, and preserving in unbroken continuity the official index of the increase or decrease of British shipping, the divisor '100' will be found in other respects also a very eligible factor possessing great commercial conveniences.

"(1.) We know for instance that, in the register tonnage of a vessel

computed by the plan proposed, *every ton must consist exactly of* 100 *cubic feet*, therefore, to ascertain the number of cubic feet in a vessel's hold under the tonnage deck, it is only necessary to add two ciphers to the right of the figures expressing the registered tons under that deck, and the number of cubic feet in the hold is at once shown.

"For example, suppose the register tonnage under the tonnage deck of a vessel to be 619 tons, then 61,900 feet is the cubical content of her hold.

"(2.) Again, to find the number of tons of export measurement goods of 40 cubic feet to the ton, which a vessel is enabled to take or stow, it is only to divide the above number of cubic feet by 40, having first made the proper deduction due to the spaces which may be occupied by the crew, store-rooms, provision, and water, pump, well, beams, &c., which, on the whole may, practically speaking, be estimated to amount to about 20 per cent., or one-fifth of the whole cubic content under the tonnage deck.

"For example, the register tonnage under the tonnage deck being as before 619 tons, the cubic content of the hold is 61,900 cubic feet, and $61{,}900 - \frac{61900}{5} = 49{,}520$ net cubic content, and $\frac{49520}{40} = 1{,}238$ tons, the quantity of export measurement goods that can be stowed. Or, in the case of import goods of 50 cubic feet to the ton, we have $\frac{49520}{50} =$ 990 tons.

"(3.) And, again, if the dead weight which a vessel can carry be required, a useful approximation is obtained by dividing the number of cubic feet in the hold, as above, by 63, from which result must be taken the weights of the water, provisions, crew, and their effects, which, in the case of being provisioned for twelve months may, practically speaking, be estimated to amount to about seven per cent., or one-fourteenth of the above result.

"For example, the register tonnage under the tonnage deck being as before 619 tons, the cubic content of the hold is 61,900 cubic feet, and $\frac{61900}{63} = 982$ tons, the gross weight of water and provisions, dunnage, and cargo, and $982 - \frac{982}{14} = 912$ tons, the net weight of cargo and dunnage.

"The system having thus been generally investigated in the progress of the foregoing analysis, its practical application to the admeasurement of shipping will be readily entertained by inspection of the blank formula prepared for the measuring officer, and the various examples of the operation given under the head of Chapter IV."

The above are Moorsom's own words, written when his task was ended, and they clearly show that, whatever Sir D. A. Lange may now say, Moorsom never meant that his beautiful system should culminate in a ton of "measurement goods;" but in order to show how perfect his system is, he is at pains to explain how various tonnages can be deduced from his ton, which he distinctly, in so many exact words, has himself stated, "*must* consist of 100 cubic feet." This is the gross register ton, and not the net register ton after deductions. Because, however, Moorsom, amongst many other things, showed how it was easy to calculate the tonnage for measurement goods, from his tonnage, which *must* consist of 100 cubic feet, Sir D. A. Lange now has the assurance to put it forward as if the be-all and end-all of Moorsom's system was to do that one thing, and was not to do what Moorsom himself, says it was to do, to settle a ton which must contain 100 cubic feet of space.

HUMANITARIAN PETS.

"The only compensation due to shipowners who send unseaworthy vessels to "sea, with men a thousand times better than themselves on board, is, in my opinion, "a halter apiece, and the offices of the hangman."—SAMUEL PLIMSOLL. Case of the *Parga*.

THE present humanitarian agitation, which seeks to hamper the shipowner and to put commerce into fetters, proceeds on the assumption that crews of ships are not responsible for wrecks and loss of life at sea, but that the owners who stay on shore are responsible. The sailor is now taught to regard himself as cruelly used—as ground and trodden down by unscrupulous shipowners, than whom he is a thousand times better. By preaching this doctrine constantly, our humanitarians are leading seamen to believe it themselves, not in an exceptional sense but as a general and ordinary fact: and by raising up strife between employer and employed, the said humanitarians are actually leading up to greater losses than any they can prevent by inspection of ships in port. We commend to their consideration the following two cases, out of many, that have come before us this week. The seamen referred to in these cases may (in their own estimation) be a thousand times better than the owners of their ships, or of ships like the *Parga;* but the question is, do or do not such seamen, by their misconduct, endanger property and the lives of their officers? or what is, of course, of more importance, do they not jeopardize the life of other "poor Jacks?" If this be so (and it cannot be denied), then, whilst we would not go so far with them as Mr. Plimsoll would have gone with the owner of the *Parga*—we would not hang them right out—we should be glad to

see a little wholesome legislation that would make poor Jack smart just a little for the breaking up of a voyage in a seaworthy ship. We hope that, although this is a milder proposal for Jack than is Mr. Plimsoll's proposal for shipowners, the honourable member will not think it too mild. The cases we bring to notice are the following:—

"At Greenock Justice of Peace Court, on 13th September, thirteen seamen were charged with insubordination on board the Greenock ship, *Colmonell*, while lying in Lamlash Bay, on Friday evening. The ship left the tail of the bank for Havana the previous night. The crew were all the worse for liquor, and a free fight took place, which had to be quelled by the marines on board H.M.S. *Black Prince*. When quiet had been restored, a few of the men consented to work, and the vessel dropped down the Frith, but, owing to a gale which sprang up during Saturday forenoon, the captain put into Lamlash Bay. Here the men refused to work, and, becoming outrageous from the effects of drink, which they had taken on board in bottles, another *melée* ensued. Knives were drawn, and several severe cuts were sustained; but the most serious stab was inflicted by a Dutchman, named Santoblazitk, on an Englishman, named William Gibbon, whose left cheek and right arm were ripped up. The officers were powerless to check the riot, and assistance had to be telegraphed for to the Greenock authorities, who despatched a body of policemen in a tug steamer. The fight, which commenced late on Saturday afternoon, continued at intervals till early on Monday morning, when the constables arrived alongside the vessel. The master gave the crew another chance of proceeding to sea, but all refused to go, without stating any reason. The men were then taken on board the tug steamer, and brought to Greenock, where Santoblazitk was charged with stabbing. The others were taken before the justices, when five of them pleaded guilty, and were taken back to the ship; and the remaining eight were found guilty of refusing to obey orders, and were each sentenced to ten weeks' imprisonment, with hard labour. One of the justices remarked it was the worst case that had been before the court for many years."

The second case is as follows:—

"On the 5th September last, Joseph Williams, a seaman, or an alleged seaman, was fined by the Cardiff Bench, the full penalty of five pounds for contravening the 255th Section of the Merchant Shipping Act, 1854, by giving his name as Joseph Lewis, and for stating the name of his last ship falsely. In default he was committed to the county gaol for two months, with hard labour. As the circumstances are peculiar the case is worth more than a passing notice. It appears the prisoner signed articles for the *Rapid*, of Wexford, at Cardiff, on the 15th August, 1872. The vessel proceeded on the 20th, but he failed to go. On the 21st he

turned up at the Newport Shipping Office, twelve miles distant, and offered himself to the master of the *Lebanon*, of Leith, bound for the Brazils. It was there and then the offence against the law was committed, by stating his name wrongly, and that he had served in the *Jura*, of St. Johns, instead of the *Locklee*, of London. He signed articles for the *Lebanon*, and received an advance of £2 5s., the same as he had got for the *Rapid* a few days before. The *Lebanon* sailed on the 25th, and Williams was seen amongst the sailors lending a hand. On the morning of the next day at four, when off Lundy Island, and in taking in the main sail, he was also seen, but then was supposed to have fallen overboard in the dark. The weather was stormy. Every effort that could be put forth with a small crew was made, but without avail. No trace could be found. For three days the ship and crew battled with the storm, but when off Scilly, and pretty well exhausted, they appealed to the master to put the vessel back, as it was considered impossible, short-handed as they were, to make the voyage in such weather. This request was reluctantly agreed to—the less so—that some of the sails had been blown away. The ship reached Penarth Roads on the 30th. In the meantime the master, who has a touch of genuine piety so often seen amongst rough men 'who do business in the great waters,' solemnly repeated the burial service for the dead, in the presence of the crew, and over the yawning grave of agitated billows which were supposed to shroud the hapless remains of their lost comrade. Being also very particular in complying with the law as well as conforming to the teaching of the Gospel, he came on shore to the Mercantile Marine Office and made a formal report of the death for transmission to the Registrar-General of Seamen. Judge, however of his astonishment, when on going back to the ship the next day, he was informed that the lost one had been found. Who can picture the indignation and dismay that filled the righteous soul of the captain? Poor Jack had been reposing in some part of the ship, where a quantity of preserved meat was stored, and, no doubt, had endeavoured to make himself comfortable, whilst the other men were toiling. The owners of the ship suffered an estimated loss of £300 in consequence of Poor Jack's desire for a little rest. All this was bad enough, but to 'laugh in his sleeve' whilst the master was solemnly reading the service for the dead over him was really too bad. It was the last drop in the bitter cup. He was taken on shore to the Superintendent of Mercantile Marine, who ordered his arrest, as he was recognised as a deserter from the *Rapid*. He was convicted for this offence as well, and as the justices did not regard his desire for feasting and rest in the same light as he himself did, he was sentenced to two weeks more imprisonment to be performed on the expiry of former conviction."

OUR GREAT PORTS.

BELFAST.

THE name of this port is said to be derived from a ford at the mouth of the Lagan river. The Normans called it *Le Ford*. The native Irish termed it *Bealfearsaid*, or Fordmouth. By another authority it is called *Beal-na-farsad*, or mouth of the Ford. These terms are, evidently, synonymous.

There does not appear to be any historical mention made of the place previous to the twelfth century. In 1181, the famous Sir John De Courcy was created Earl of Ulster by Henry II., and a grant of the district made to him. He is the first nobleman created as such by an English monarch, and, furthermore, he had the privilege granted him of remaining covered in the presence of royalty—a concession which has been exercised by his descendants from time to time down to the present century. It is supposed that he built a castle at Belfast, to guard his possession, as the "Ford," or "Pass," was then considered of great importance. As a matter of course, other buildings would soon be raised around such a focus, which, with their superior stone walls, supplanted the hovels of the poor fishermen who had previously occupied, alone, the site. Thus were laid the foundations of the future town. In those perilous times the line of civilization lay along the coast, and such a place would be of the very first importance to either the invading English or the native Irish. Hence the castle became the scene of many a tough contest. When Edward Bruce was proclaimed King of Ireland, in 1315, and landed in those parts, he attacked Belfast, and destroyed the castle. After a short reign he was beheaded at Dundalk, in 1318; and the Castle of Belfast must have been rebuilt, for, in 1333, William de Burghe, then Earl of Ulster, was there murdered. The district had been ruled with a stern but orderly hand previously; but the rebellious English, who had slain their leader, united with the native race, and it was then given over to anarchy. The castle fell into the hands of the O'Neils, and remained in their possession, more or less, for upwards of two centuries. In 1503, and again in 1512, it was taken and retaken by the then Lord Deputy, the Earl of Kildare. But, in 1552, it was given up to the Chief of Claneboy—an O'Neil—who consented to hold the tenure of it from the Crown. This precarious occupation did not last long, for, on the rebellion of Shane O'Neil, the estates, including the Castle of Belfast, of all the rebel chieftains, were confiscated. Sir Thomas Smith, the grantee of the district, and his son, with their expedition, were defeated, and the principals slain. The

same disaster met the force under the Earl of Essex, who made the attempt soon after. He, however, saw enough of the place to impress him with the idea that it was a most eligible spot to found a dockyard, and make it a chief port for Ulster. The same opinion was shared by Sir John Perrot, who visited it some ten years after the earl. It was not, however, till the ancestor of the present Marquis of Donegal—the able Sir Arthur Chichester—was appointed Lord-Deputy, in 1604, that a change for the better came over the scene. From that eventful period Belfast dates her regeneration, rise, and progress, which has been continuous and steady ever since. He brought over a number of settlers from his Devonshire estate. They introduced the prosperous arts of peace where, previously, nothing had so much prevailed as "wild war's alarms." He was still more encouraged and strengthened in these pacific and politic measures by the general immigration of Scotch and English colonists into Ulster, which took place a few years after. Under his benign influence the place so grew and flourished that, in 1611, a Royal Charter was granted to it, making it a borough of incorporation, with "sovereign burgesses and commonalty," and having the further privilege of returning two members to the Irish Parliament at Dublin. No doubt the many forfeitures of estates, amounting to 511,465 acres, in the province of Ulster, for various rebellions, and which were divided amongst the English and Scotch settlers, contributed considerably to the success of the place; and this success appears to have gone on at a great ratio until the breaking out of "Maguire's Rebellion" and the massacre of 40,000 Protestants in Ulster, in 1641. Then followed a period of disturbance of about half a century. The beheading of Charles I., in 1649, caused a profound sensation in Belfast. Although mostly Presbyterians, and opposed to prelacy, the population was loyal to the core; and the mode in which the indignation of the people was expressed, drew down the censure of the poet Milton upon them. Notwithstanding that the place was taken and retaken by the contending parties during the civil war, the character of the merchants of Belfast stood so high, that their property was generally respected by both sides. Another period of peace and prosperity again dawned on them when William III. visited the place, and resided there for a short time, in June, 1690. As a reward for their loyalty, the King made a grant of £1,200 a year to the Presbyterian ministers there. The commercial progress of the place was so great, that, in a few years, it was placed on the first rank, as a trading community, in a scale of credit appended to the names of the different commercial towns of Europe on the Exchange at Amsterdam.

It has been alleged by some that to the Earl of Strafford, in 1637, is due the turning point of prosperity which has done so much for Belfast.

Previous to that year, the small port of Carrickfergus—a few miles distant—enjoyed certain monopolies and privileges, which the Earl purchased, and thus threw both ports open to fair competition. The result has proved which is the most suitable. But it cannot be doubted that it was the policy of Sir A. Chichester which inaugurated the new era of progress; and by the time that those mischievous monopolies were abolished, Belfast had become a thriving community. Trade and manufactures appeared to have gradually developed since that period; and especially after the stimulus given to them by the cessation of hostilities at the close of the seventeenth century. It is, however, remarkable that the printing press did not reach it till 1696; but, in few years, namely, in 1704, Belfast had the honour of sending out one of the first editions of the Bible ever printed and published in Ireland. In 1708, a sad calamity happened to the town, when the old castle was burned, and three of the ladies' Chichester lost their lives in the conflagration.

It was about this period that a fresh start was made in the staple trade of the district—the linen manufacture. It had taken root in the soil long prior to this time, for it is said, by one authority, that "A colony of Scots, in the reign of James I., planted themselves in the north-east part of Ireland, and there established the linen manufacture. It was liberally encouraged by the Lord Deputy Wentworth, in 1634." Another manufacture it seems had also progressed, and that was the woollens. In 1698, Parliament sent an address to William III., stating that the progress of the manufacture of woollens was so great in Ireland, that it had a prejudicial effect on the English trade. His Majesty replied, that he would do all in his power to discourage the woollen manufacture in Ireland, and encourage the linen manufacture, and promote the trade of England. An Act was then passed allowing hemp, flax, linen thread, and yarn, to be exported from Ireland free of duty. The Irish Linen Board was established in 1711 (abolished, 1828); the Linen Hall, Dublin, was opened; and in 1782, the merchants of Belfast subscribed £17,550 to build one at Belfast. The manufacture was still further stimulated in 1806 by the introduction of machinery. This was the first factory of that kind in Ireland. It consisted of 212 spindles, and was adapted for canvas yarns. The Linen Board, to encourage the introduction of more of them, gave a bounty of thirty shillings per spindle; and this policy succeeded so well, that, in three years, several others had been started, comprising 6,369 spindles. In 1870, there were no less than 154 factories of this description in Ireland, employing 55,000 persons. Belfast, of course, monopolises the great bulk of them. All the great varieties of linen manufacture, such as damasks, diapers, &c., have gained a first-class reputation when

produced there. The exports from Ireland of this class of goods reached—

In 1825 to 52,559,678 yards to Great Britain.
,, ,, 2,553,587 ,, ,, Foreign ports.

Since 1825, no record can be obtained of the quantity sent to Great Britain, as, in that year, the trade between the two countries was declared "coasting," for which no such statistics are prepared. Since then the "Linen Board" has been "disestablished," and the "bounties" have shared the same fate. The linen trade has not, however, suffered in consequence. So far from it, the business had never been so flourishing before as after they were abolished. One reason for this may be found in the fact of the establishment of the "Royal Society" about the period named. Its primary object was "for the promotion and improvement of the growth of flax in Ireland;" but, doubtless, its working had a salutary effect on the manufactures of the raw material as well. One writer forcibly puts the case thus:—"It is not too much to say that never has any society done so much for the civilization of a country as this has done for Ireland." It received an annual grant from Government of £1,000, and did not confine its operations to Ulster, but had a staff of instructors all over the island. The returns show that, in about thirty years, the acreage sown has increased from about 50,000 to 200,000 acres, and the value from half a million to about two millions sterling.

Another great staple at Belfast is the cotton trade. In 1784 a company was formed, and machinery brought from Scotland, for a mill to spin twist, by means of water for a motive power. The adventure succeeded, and was followed by others, both there and in other parts of the country. The success, indeed, was so great for some time that, in twenty years after it was commenced, it gave employment to 27,000 individuals in Belfast and its neighbourhood, within a radius of ten miles. A great check was, however, administered to that branch of business during the American civil war, when several of the mills were converted to spin flax.

There are other, but minor businesses, such as shipbuilding, which was first begun in 1792. It is now revived, and some of the largest and finest vessels of the merchant navy are turned out at the yard of Messrs. Wolff and Co. Then there are distilleries, breweries, corn and flour mills, founderies, tanneries, vitriol works, felt manufactories, saw mills, rope yards, sailcloth factories, &c. But, above all, it is the chief seat, in the North of Ireland, of the linen and cotton manufacture. It is more of a manufacturing place than any other in Ireland. It must not be forgotten to note that some very large castings in iron are executed there, and steam engines are also turned out. The provision trade is

also most extensive: employing many vessels in the traffic with England and Scotland, especially with Glasgow. Some of the most efficient and well-found passenger boats in the United Kingdom, run between it and the last-named port. There are also regular packets to Liverpool, London, Fleetwood, Carlisle, Dublin, Cardiff, &c.

The exports consist of bacon, butter, pork, beef, corn, raw hides, manufactures of linen, calico, muslin, cotton yarn, linen yarn, soap, leather, &c.

The imports comprise cotton, wool, flax, flax seed, barilla, potash, wine, timber, &c.

A few statistics will best show the progress of the place in population and wealth, and be a clearer index of the nature and amount of business done.

The population returns figure as follows:—

Year 1758	8,549 persons.
,, 1782	13,105 ,,
,, 1807	22,095 ,,
,, 1821	37,277 ,,
,, 1831	53,313 ,,
,, 1841	75,308 ,,
,, 1851	100,301 ,,
,, 1861	120,544 ,,
,, 1871	174,394 ,,

Of ships registered at the port there were—

In 1847	464 vessels ...	68,361 tons.
,, 1852	464 ,, ...	78,373 ,,
,, 1862	527 ,, ...	65,009 ,,
,, 1872	439 ,, ...	64,099 ,,

The vessels built were—

In 1872	4 steamers ...	9,476 tons.
,, ,, ...	1 sailing vessel	1,337 ,,
Total	5 vessels ...	10,813 tons.
In 1868	5 sailing vessels	8,119 ,,
,, ,,	steamers	(Nil)

The shipping returns show that in the foreign trade there were engaged inwards—

In 1847	397 vessels ...	79,442 tons.
,, 1852	269 ,, ...	44,317 ,,
,, 1862	279 ,, ...	68,329 ,,
,, 1872	313 ,, ...	112,660 ,,

The same trade, outwards, displayed—

In 1847	350 vessels	...	77,142 tons.
,, 1852	202 ,,	...	41,441 ,,
,, 1862	78 ,,	...	23,378 ,,
,, 1872	110 ,,	...	40,822 ,,

In the colonial trade, inwards, there were—

In 1847	73 vessels	...	21,714 tons.
,, 1852	78 ,,	...	23,338 ,,
,, 1862	47 ,,	...	18,669 ,,
,, 1872	65 ,,	...	39,149 ,,

The same trade showed, outwards—

In 1847	90 vessels	...	27,039 tons.
,, 1852	46 ,,	...	13,568 ,,
,, 1862	38 ,,	...	18,255 ,,
,, 1872	57 ,,	...	34,950 ,,

The coasting trade, inwards, comprised the following :—

In 1847	4,558 vessels	...	465,224 tons.
,, 1852	5,466 ,,	...	639,185 ,,
,, 1862	6,747 ,,	...	874,913 ,,
,, 1872	7,621 ,,	...	1,114,555 ,,

The same business, outwards, is indicated as under—

In 1847	2,014 vessels	...	295,905 tons.
,, 1852	1,803 ,,	...	386,354 ,,
,, 1862	2,723 ,,	...	570,743 ,,
,, 1872	3,206 ,,	...	673,037 ,,

The amount of Customs' duties collected were—

In 1783	£32,900
,, 1828	200,694
,, 1858	383,088
,, 1870	299,258
,, 1872	386,770

The amounts collected on principal items were, in 1870—

On Tobacco	£128,449
,, Sugar	5,114
,, Tea	87,987
,, Foreign Spirits	55,338
,, Wines	21,054
,, Sundries	1,316
Total	£299,258

The port of Belfast is managed by Harbour Commissioners elected by the ratepayers. This arrangement was made under an Act of Parliament passed in 1831. The offices form a splendid structure, in the Italian style, finished in 1854. The harbour is now one of the finest in the kingdom. Formerly, as already stated, it was outrivalled by the creek of Carrickfergus; and even up to 1839, the large craft frequenting the port had to lie at the pool of Garmoyle, four miles off. In the year 1840, a new channel was cut, and vessels drawing 18 to 20 feet could be admitted at spring tides, and those requiring 16 feet at neaps, with 9 feet at low water. Since that period several new quays have been constructed, and five docks and basins, at an enormous cost. The following is a tabulated statement of the dock and other accommodation now existing:—

Year opened.	Name.	Depth on Sill.	Width at Entrance.	Area of Water.		Quayage.
		Ft. in.	Ft. in.	Acres.	Yards.	Miles. Yds.
1832	Prince's Dock	...	60 0	3	4,174½	0 572
1851	Clarendon Dock	...	50 0	3	3,932½	0 664
1867	Abercorn Basin (open basin 700 by 700) ...	...	...	12	2,389¾	0 456⅓
1872	Dufferin Dock	12 0	60 0	3	1,573	0 548⅓
1872	Spencer Dock	...	80 0	7	2,389¾	0 633⅓
1872	Entrance Basin	...	...	5	60½	0 66⅔
	Total Docks ...	...	...	36	0	1 1,181
...	Harbour (Queen's Bridge to Thompson's Embankment)	...	...	60	4,325¾	...
1800	No. 1 Graving Dock ...	1 9	36 0	245 ft. Len. Floor 50 ft. Bdth Top		...
1826	No. 2 ditto ...	...	30 0	287 ft. Len. Floor 58 ft. Bdth Top		...
1867	Hamilton ditto ...	5 7	60 0	...		...
1847	Queen's Quay	...	450 (river)	...		0 740
1848	Canal Quay	...	450 ditto	...		0 66⅔
1849	Donegal Quay	...	450 ditto	...		0 775
1849	Prince's Quay	...	440 ditto	...		0 275
1849	Albert Quay	...	360 ditto	...		0 470
	Total	...	...	96	4,325¾	2 1,747⅔

The large amounts which have been required to complete these extensive works have been raised on local loans, secured on the harbour dues. The accommodation, it will be seen, is very extensive, being at the rate of one acre of water area to 20,000 tons shipping per annum, whereas Sunderland is worked to the extent of one acre to 40,000 tons, and Liverpool at the rate of one acre to 27,000 tons. Besides, there is the

magnificent estuary or lough. It is 13½ miles long by 8 miles broad at the entrance, gradually narrowing till near the town. The bay is well sheltered by hills from northerly and westerly winds, and affords a safe anchorage, although not without some sandbanks.

The public buildings at Belfast are of an extensive character, indicating the energy and business purpose of the people. The new Custom House and Post Office is said to be one of the finest buildings in the United Kingdom, at least of its class. It was commenced in 1854, and finished in 1857. It is built of Glasgow stone, and its style of architecture is Palladian. It has ample room for various public services, and by combining these under one roof becomes a great convenience to a public so full of business. The Custom House and Post Office are not only comprised under its roof, but the officers of Inland Revenue and those of the Local Marine Board are also accommodated. There are many other large buildings evidencing the wealth and progress of the place—such as the Commercial Buildings, erected in 1820 at a cost of £20,000. The "Royal Society," formerly mentioned, met here. There are also several large banks, and the flax mills are most extensive and numerous. The hum of machinery therein, the airy rooms, and the quiet demeanour of the employées, are very pleasing and instructive. There are many public schools, including a Government School of Design and the Model School of Education. The general appearance of the town is one of cleanliness, thrift, and commercial prosperity. The buildings are good, and many streets wide and regular. Owing to the descendants of Sir Arthur Chichester still residing there, and holding possession of the property acquired by that far-sighted man, a great portion of the ground on which the town is built belongs to them. Were it not for certain long leases still extant, it is said that their income derived from the town alone would amount to £300,000 per annum. The town itself is built upon a flat piece of ground, scarcely rising six feet above the sea level, and has not an inviting look from a distance. It, however, improves upon acquaintance, and, what with the grand lough stretching away—the hills around studded with the villas of the merchant princes—and a charming landscape, the first impression is soon dissipated, and a feeling of pleasing gratification sets in on realizing the *tout ensemble*.

One feature about the population of Belfast ought to be noted—so much unlike some other towns of Ireland—and that is, the absence of squalid poverty and street beggars. This is an index at once of laborious and thriving industry, saving and thoughtful habits. Of course, Belfast has its workhouse. The poor will always have a place; but here they are properly cared for. Their guardians also seem to look after the education of the young under their charge; for lately they have resolved to borrow £12,000 for new schools. With regard to educational matters this town

is highly favoured. In addition to other institutions of a kindred nature, one of the "Queen's Colleges" is located there. It was founded under the provisions of the Act 8 & 9 Victoria, cap. 66; and letters patent were issued on the 30th December, 1845, for its constitution and government. It was opened on the 30th October, 1849, and a further charter granted in 1863. By the latest "Report" issued, it appears there were 358 students on the roll for the year 1872, as against 195 for the year when it was opened. It is affiliated to the Queen's University, which sits in Dublin Castle, and the senate of which is empowered to confer degrees upon the students who go up from the Belfast College for examination.

The most striking thing to notice about this port is the untiring energy of its inhabitants. It is not so well situated for traffic as some other ports in Ireland—as, for instance, Cork, Galway, Dublin, or even Londonderry. Certain, however, it is that since the exodus of the Stuarts the progress of the town has been unabated. Neither has it any native mineral produce to stimulate its energies. The whole credit of building up a famous town for manufactures and commerce is due to the skill, energy, and probity of its citizens.

The shipbuilding yard of Messrs. Harland & Woolf, at Belfast, has built the greater part of Messrs. Bibby's fleet, as well as the fleet of the White Star Line, and their work is second to none in the United Kingdom.

ERRATA.—At page 739, line 20, for "Auleanei," read "Auliana." At page 745, line 4, for "about 200 acres," read "250 acres."

ARMOUR PLATES.

ARMOUR plates were first used in the construction of ships of war in the case of an iron steam battery for harbour defence, commenced at Hoboken, U.S., in 1844. At the suggestion of the Emperor Napoleon some *floating batteries*, clad with four-inch armour, were built during the Crimean war, and employed in some of the operations in the Black Sea, but these as well as some built by our own Admiralty in imitation of them, were of very little use on account of their clumsy form, and it was not till the advent of the French *La Gloire* and our own *Warrior* that it began to be seen that the war-ships of the future would be ironclads. In 1861, when the *Warrior* was built, it was believed that, while the thickness of her armour (four and a half inches) represented the maximum of weight which a seaworthy steamship could carry on her sides,

it, at the same time, provided a defence practically invulnerable. Both these views were soon shown to be defective, and it is now seen to be practicable to build, as well as desirable to have, seagoing masted ships with armour averaging seven inches in thickness, and in some large ocean cruisers without masts ten to twelve inches of armour have been used on their sides, and twelve to fourteen upon their turrets. Nor does this great increase in the thickness of armour constitute the sole advantage which recently constructed ironclads have over the *Warrior*. Besides the important consideration that the armour is so distributed over the surface of some of our latest ironclads that a belt at the water-line throughout the ship and other really important parts are protected, which is not the case with the *Warrior*, where merely the middle portion of the ship is ironclad; it must be added that armour plates are now better made and are fastened on the ship's side much more securely than formerly. Experiments made at Shoeburyness, under the direction of a Committee appointed for the purpose, have furnished data upon which have, from time to time, been determined the thickness and nature of the backing behind the armour, and the character of the fastenings by which the armour is secured to the ship.

The extent of surface to be clad with iron in any ship and the thickness of her armour are determined by her designer, and in reference to her other qualifications. A model is made at the dockyard, and on it the size and dimensions of the separate plates are planned and an account of these particulars, and also of the form of each plate, is sent to the manufacturer. Armour plates are usually from fifteen to eighteen feet long, and from three to four feet wide. Two methods of manufacturing them—namely, *hammering* and *rolling*—have been tried and each has its advocates, but the Government of this country has decided in favour of the latter, and for the last seven or eight years all armour plates used for the ships of the Royal Navy have been *rolled* plates. The firms who manufacture most of the armour used in the construction of the English ironclads are Sir John Brown and Co., of the Atlas Works, Sheffield, and Messrs. Cammell and Co., of the Cyclops Works, Sheffield. The Thames Iron Company, who were the builders of the *Warrior*, still adhere to *hammered* in preference to *rolled* plates, and many ships built for foreign governments have this description of armour. The process of rolling plates is thus described by Sir John Brown:—"Bars twelve inches broad and one inch thick are first rolled, five of these are then piled on and rolled into a rough slab, two of these slabs are now rolled into a plate two and a half inches thick, and, finally, four of these two-and-a-half-inch plates are piled and then rolled into the finished four-and-a-half-inch plate." It will thus be seen that pieces of iron of an aggregate thickness of twenty inches are, in the

process of manufacture, rolled out into one plate four and a half inches thick. The rolling is performed by means of two heavy cylindrical rollers, one placed vertically over the other, the lower one suspended at a fixed height, the upper one moveable up or down, so that the width of the opening between them may be varied at pleasure. The rollers turn in opposite directions, each towards the opening between them on the side next the furnace in which the iron is heated, so that a mass of iron passed in between them, is forced through by their rotation. They are turned by steam power. The rollers, being set at a distance from each other a little less than the thickness of the iron in the furnace, the heated metal is brought out and placed between them, and is at once rolled through, coming out on the other side reduced in thickness, but of increased length and breadth. The distance between the rollers is then decreased, and the iron passed through again, and so on until it is of the required thickness. By the immense pressure thus brought to bear upon the heated metal, the various pieces of which it is composed are thoroughly welded into one mass. In the manufacture of hammered plates, the welding is effected by blows from a steam hammer, instead of by rolling. Before the plates are sent to the dockyard, one or more are chosen at random by a Government official to be tested. The testing is performed at Portsmouth, on board the *Thunderer*, an old wooden ship. The plates are fastened to a target erected at one end of the ship, and shots are fired at them from guns of prescribed calibre, in a battery at the other end, the men being protected from the splinters of the shot by a casemate. If the plate does not stand the test satisfactorily, the lot, from which it was selected, is rejected. This system of tests secures as good an article as it is possible to make. During the first few years of the manufacture, it was found that the plates were often split and cracked by the shot, in the neighbourhood of the holes which had to be bored through them for the screws or bolts by which they were attached to the targets. It was thus assumed that these holes were necessarily a source of great weakness, and many schemes were proposed for connecting plates with the ship's side in ways by which this important defect might be avoided. One was, that an iron frame should be attached to the ship, and the plate dropped into it, the edges of the frame being afterwards beaten over to secure the plate in its place. The necessity for anything of this kind has been obviated, by the great improvements which have been effected in the quality of the armour, the metal now used is so tenacious, that it is scarcely any weaker in the neighbourhood of a bolt hole than in any other place. The superiority of the armour of the present day over that made ten years ago, was fully exemplified in the recent experiments on the turret of the *Glatton*. A hole was punched through one of her fourteen-inch plates

by the shot, but there was no other damage done to the plate than the mere penetration. Under similar circumstances, in the case of plates experimented upon at Shoeburyness, some years ago, there would be seen large cracks radiating from the shot hole, producing a complete separation of the plate as far as the nearest bolt holes, and in many cases the armour plate would have been broken in two or three pieces. The price of armour plates, some little time ago, was about £30 per ton, their value now is of course subject to the same fluctuation as that of other iron.

Armour plates are usually bent to the shape required by hydraulic pressure. A block of cast iron, having its upper surface hollow (of the same shape as the armour plate is to be), is placed upon the piston rod of the hydraulic press. Upon this is laid the armour plate, and above it is constructed a framework of iron bars, firmly fixed, so that their under sides form a surface of a corresponding shape to the block below. When the plate is in its position upon the cast iron block, the pressure is applied, the effect being that the plate is lifted slowly, and brought in contact with the framework above, and so gradually squeezed into the shape required. Before being bent, the plates are carefully and gradually heated in a furnace, the required temperature being indicated by a bright red colour in the iron; if it were made hotter, it would be liable to be indented, or spread out laterally, in the process of bending; if not so hot, there would be a danger of the plate cracking when subjected to great pressure.

An important element in the armouring of ships, is the cushion of wood which is placed between the armour and the main structure of the ship. The part of the ship to which the armour is attached, is built up of iron ribs and plating, and is so constructed as to be complete, both as regards strength and water-tightness, before either the armour or wood backing is put on. The armour is rather a source of weakness to the structure than otherwise, and if its edges were not accurately fitted, so as to prevent any possibility of the plates moving, its *working* would, in a heavy sea, seriously endanger the ship. In the *Warrior*, the wood behind the armour is a foot and a half thick; in ships of more recent construction, it is generally from ten to twelve inches; but, in some cases, there are two layers of backing, with an intermediate iron skin. During the building of the earlier ironclads, there was much discussion about the relative efficiency of different kinds of backing. Some very eminent engineers and naval architects believed that a ship's side entirely made up of iron, would offer more resistance to shot than would armour and wood backing of the same weight per square foot of surface—in other words, that a six-inch armour plate was more effective than a five-inch plate with a nine-inch thickness of teak backing behind it. It was

proved by experiment that such was not the case, and that the latter was much superior to the former arrangement; it is possible, however, that the improved quality of the iron, taken in conjunction with the perishable nature of the wood, may ultimately lead to a reconsideration of the whole question, and perhaps to the abandonment of backing behind armour. Among the various kinds of backing which have been proposed, are india-rubber, compressed cotton wool, millboard, and even water in tanks; not one of them, however, has proved to be as good as wood. Teak is the kind of wood generally used, both from its durability and its freedom from acids, which would corrode the iron. The logs of teak are usually placed on the ship's side in the direction of her length. If there are two layers, the logs of the outer one are arranged vertically so as to cross the others. The *backing* is fastened to the iron skin of the ship, and all the seams in it are well caulked to add to its rigidity as well as to render it watertight. Previous to an armour plate being placed on the ship, a coating of a glue, manufactured for this purpose, is spread (hot) upon the wood, the surface of the plate also being slightly heated, and thus all inequalities in the attached surfaces are filled up.

The means of connecting the armour to the ship, has, like almost every other detail in the construction of ironclads, been a fruitful subject of debate. The French use large screws, which pass loosely through holes in the armour and into the wood backing, and by the hold of the screw in the wood, keep the armour in its place. A great disadvantage attending this is, that in the event of the armour being bent by shot, it is all but impossible to get the screws out. In the English ironclads, bolts pass through the armour, wood backing, and iron skin of the ship, having a screw upon their inner end, upon which a nut is screwed up after the bolt is in its place. The bolt is driven through the wood, and has thus its tightness in the wood as well as the screw-nut on its end to keep it fast. In the French system it is found that the effect of the firing of shot is to drag the screw out of its hole in the wood, thus allowing the armour plate to curl outward, while, on the other hand, in the case of the nut-and-screw bolt, the bolt breaks off at its weakest point—*i.e.*, the beginning of the screw. To prevent this, an india-rubber ring is placed upon the bolt, enclosed in an iron cup-ring, and having another iron ring between the india-rubber and the screw-nut. The elastic ring admits of the bolt being drawn out slightly in response to the blow of a shot, and thus tends to break the shock which would otherwise cut the bolt. The danger to the fastenings of the armour is produced, as has been indicated, by the tendency which plates have to bend when struck by shot. The plate can only be slightly forced in at the place where it is struck, because of the support behind, the consequence is a tendency to spring out on all sides of the shot mark.

The armour plates used by the Americans in the construction of their monitors, were not welded together, as are those used by our own Government; they were made by simply connecting thin plates together by means of rivets—thus, a ten-inch plate would be made by riveting together ten one-inch plates. By experiment it has been ascertained, that a good five-inch rolled plate is much more capable of resisting shot than ten-inch armour built up in this fashion. In conclusion, it may be remarked, that it is not enough in comparing two iron-clads of similar design, to say that they have each armour of a certain thickness, the quality of the armour plates, the accuracy with which they are fitted on the ship, and the nature of the fastenings by which they are kept in place, may so affect the question as to give one ship a decided superiority over another which is said to be as strong.

H. E. BROWN.

SHORT YARNS FOR SAILORS.—No. 6.

On Beauty and Excellence in other Lands and other People.

No country has an entire monopoly of beauty. Some have it in one form; some in another. There is a rich luxuriant, abundant, gushing beauty in its appropriate sphere; there is a wild, haggard, lonely, solemn beauty in a different meridian and clime; there is beauty in regions that abound in multitudinous forms of life and activity; there is beauty in lands cold and remote where life is scanty and its voices low and still. There is a beauty in tropical countries where the aloe will bloom, and the cactus put forth its delicate blossoms by the way side naturally and without the force of art, where loveliest flowers cover the soil as with a carpet, and climbing plants of exquisite grace and colour festoon the forest trees from bough to bough, and where the snakes in the grass, the birds among the leaves, the wild creatures in their lairs are all marked by beauty. This is the grandeur of day in a tropic clime; but if you would see the beauty of night go to some northern zone when the young moon rides in the deep heavens; when the electric aurora flashes from the horizon, and when innumerable stars shine like "patines of bright gold," or like sparkling jewels set in the dark enamel of the sky. Here then in these opposite regions is a warm beauty, a cold beauty, an earth beauty, a sky beauty; all somewhat different from that of our native land and fitted to have sacred influence on our minds and hearts when we travel into new scenes. Be it remembered too, that very many things that contribute to the beauty and comfort of our homes, through the

medium of local industry and art, are only renewals in a changed form of ancient beauty. In our winter season, for example, there is exquisite charm in a bright fire, its rich colour, its curling flames, its warm gladsome light quivering against the window curtains and the wall. But what is a fire but a reproduction of the sunbeams which shone upon the earth a million years ago and nourished those gigantic ferns and other plants that now in their mineralised condition constitute our coal. The luxuries of our diet, our houses and our persons, are often only the concrete form of the beauty of foreign lands in ages that may be called foreign too, so remote are they in the abysm of antiquity from the earliest records of time. Every grain of gold in a chain; every jewel in a brooch or ring is a thing of beauty that was slowly formed long, long ago, through many ages, under the pressure of the mightiest forces of nature, and is now brought down to us in this present hour and place for our use and pleasure.

It is the great privilege of a sailor that he sees oftener than other men the beauty of foreign lands. The sails of his vessel are to him like the "wings of the morning that bear him to the uttermost parts of the earth," and it ought to be a joy to him that not only is there no distance which can remove or hide him from the eye and thought of his Maker; but that every change of place and clime brings new proofs of His sacred presence, new illustrations of His heavenly beauty, His generous bounty, and tender love. The sailor, in common with all other travelling men, should go abroad hopefully and gratefully into "fresh fields and pastures new" in search of excellence and beauty, but not without tender and loving remembrance of the beauty and goodness he leaves behind. He should not leave his country without some such feeling as that which inspired Robert Burns, when he wrote "Farewell ye Bonnie Banks of Ayr," or Byron, when he composed, at sea, "My Native Land, Good Night!" He who does not feel the beauty of his own country will not derive much benefit from the beauty of any other. Unless there is an openness of spirit to take in that which is near, there will be no intelligent enjoyment of that which is far away. The tendency to overpraise one's country and to ignore or undervalue the merits of any other, arises when it exists, chiefly from political and social considerations. Englishmen in particular are apt to be somewhat boastful when abroad. They do not assert the superiority of their country in picturesqueness of valley and mountain and plain, in floral beauty or agricultural fruitfulness: they are generally too well informed not to know that in these particulars many foreign lands excel our own; but when they dilate on other kinds of excellence, on political, social, personal, moral, and religious merits, then it is that they now and then break out into "Erclesvein." No women (some of them say) are so fair as their women; no nation so

wealthy and enterprising as theirs; no habits and manners so pure and moral; no institutions so free; no church so orthodox and true; and, above all, no military and naval power so strong. Now, in some of these particulars perhaps a real superiority belongs to us; and it is a point of pardonable pride if, on reflecting on the history of our country, the uprise and extension of its liberties, its wealth of resource, and its grrdual improvements in all things, we exclaim with exultation "this is my own, my native land," and imagine that it is our destiny "to teach the nations how to live." Even a little exaggeration in this matter is excusable, and a rational preference for one's country is a feeling that even the most cosmopolitan of moralists would hesitate to condemn. At the same time it ought never to be forgotten that we have our defects and faults, as well as our excellences, and that there are qualities of great importance in which other nations take the lead, and we lag behind. In scholarship, in intellectual range, depth, and thoroughness, we are at present greatly inferior to the Germans. In vivacity, in wakefulness of mind, in quickness of the senses, in talent for organization, in receptivity of impression, and in many points of taste and skill, we are inferior to the French. In gentle and affectionate grace we are not equal to the cultivated Italian; and it is probable that even the modern Greek and Spaniard, degenerate though they are, and sadly fallen away from their once "high estate," can still show qualities of inward beauty and excellence worthy of reverence and emulation by ourselves. Almost all the Eastern nations, though marked by weaknesses which have left them behindhand in that race which is for the swift and that battle which is for the strong, have some moral characteristics of great beauty—especially a contemplative piety, a spiritual repose and calm, a pathetic patience in submission to that heavenly discipline of pain which, though doubtless always ultimately beneficent in its issues, is, for the present, far from plain as to its meaning and intention. In these respects the Oriental has something to impart to us which we need—a beauty that does not adorn our own characters.

It is not, of course, to be expected that common sailors, as they travel from place to place, can make minute analysis into the minds of the various people whom they meet, and delineate, as it were, a metaphysical map of character; but they may, even in the exercise of common sense, perceive that "of a truth God is no respecter of persons," in regard to their capacities as a whole—that nothing which He has made is "common or unclean." There is always some flower that consents to bloom, even in the desert—some grace and sweetness to make the wilderness rejoice. If in the kingdom of Heaven it shall be found that many have come from the north and the south, the east and the west, it must be by virtue of some heavenly qualities already existent in those varied

regions, whether in full development or early germ. Sailors and all other travellers should go forth in a modest and teachable spirit, well knowing that there is as much to borrow as to lend—that there are things to be seen which they have not yet seen—things to be known which they do not yet know—joys of sympathy and affection to be felt which their hearts have not yet tasted—improvements of many kinds to be realized, of which they have not as yet made a beginning. Even in things that seem to be our specialities, for which we seem formed and fitted by Nature, and have learned to do well by long experience and habit, we shall find that here and there a useful hint and suggestion may be derived from foreign sources, and that the superiority is not in all points exclusively our own.

The memory of an intelligent man should be like those flower vases which retain the scent of the roses they have held long after the roses are gone. It is when he comes home that a traveller reproduces and digests the wonder and beauty that he has seen abroad. The waves of the mighty Atlantic, the outstretched waters of the vast Pacific, the sun-lit Mediterranean, the isle-studded Adriatic and Ægean seas, the splendours of the Indian Ocean, the sparkling waters that murmur and sing among the Coral, or round the bright islands of the Chinese sea; the gales off the Mauritius, the terrors of Cape Horn, the majesty of distant mountains, the glory of forests and prairies far away—may all be brought home in the soul of an intelligent traveller; they may all serve to amuse, to enlighten, to uplift and sanctify his spirit, as he sits in the silence of his chamber, or in the porch of his cottage, or muses at evening in a country churchyard. Ships arrive continually, in the Thames, at London, and in the Mersey, at Liverpool, from all parts of the world, laden with infinite variety of produce; fruits from the groves and vineyards of Spain and Portugal, spices from India and the Malacca isles, corn from the valleys of the Danube, or the shores of the Euxine; gums, dyes, ivory, pearl, gold, silk, building timber, ornamental woods, and every conceivable thing, vegetable, or mineral, or animal, that the world produces, from the Equator northward, or southward to the Poles. Now, in all these things, there is natural beauty in a concrete and utilitarian form; there is Divine bounty and human ingenuity and intelligence, packed up, as it were, into bales and barrels, or stowed away under hatches. If, as we believe, all things had an ætherial or spiritual origin, it is not likely that they can, in any stage of manufacturing process or natural change, utterly lose or part with that ætherial essence; they are, therefore, adapted to stimulate the thoughts and feelings of men, as well as to subserve their physical wants and comforts.

It is generally believed that the poetry of life cannot be felt by those immersed in its details; that men engaged in actual work, cannot, at the

time, know or feel anything of its moral and intellectual aspects; and it is believed by many that the work would never get done, except by separating this reflective element from it. As a matter of fact, it is true that workmen are not always reflective and thoughtful; but we see no reason, in the nature of things, why the commonest arts and industries of life should not become a means of suggesting great and elevating thoughts, so that the golden thread of the beautiful may be discerned in the common web of human life. The time, we hope, will come, though we may have to wait long for it, when, as education advances and heightens, every common sailor, bringing home to us in ships the rich fruitage of foreign climes, will also bring home to us, in his mind, illustrated by his looks, his manners, his speech, his general conduct and behaviour, something of the natural grandeur and beauty, and something also of the human excellences belonging to the land where such fruitage grew.

E. A.

THREE WEEKS IN CORSICA.

Thirty years ago, Corsica was, perhaps, one of the nooks of Southern Europe least explored by ordinary tourists. People had a vague idea of it as the birthplace of Napoleon, and the "Corsican Brothers" had stereotyped, in the public mind, an idea of the island as a brigandish sort of place, of which "Vendetta" was the chief commodity. Gregorovius and Forester first told us something definite about it, and many of the erroneous notions which tended to give the island a bad name being dissipated by their pleasant experiences, a new locality, easily accessible, and combining numerous attractions, was soon added to the itinerary of European travellers, who might be anxious to vary the more hackneyed routes of Continental Europe. One summer, a sanguine companion, who, having "done" most of the usual routes, burned, like Alexander, for more worlds to conquer, suggested a trip to this insular novelty; the result of which was, that after some perquisitions on the subject, which seemed to promise well, we put ourselves in light marching order, equipped with shooting gear and fishing rods, and after travelling to Genoa, by Marseilles and the Corniche, took our passage for Bastia, *viâ* Leghorn, on a fine September evening.

On the way to Genoa, a passenger in the diligence, who professed to be well acquainted with the island, favoured us with a grisly picture of its discomforts and perils. His talk was of brigands and stilettos, of malaria, vendetta, and pathless wilds, in which the wild boars ripped up unwary tourists botanizing in their neighbourhood; but our friend

proved to be a courier out of place, and, perhaps, had an eye to business. His stories, as we partly anticipated, turned out to be mere bogus inventions of his fertile brain. A little quinine and opium were all the precautions we added to our knapsacks, and these proved very useful upon more than one occasion. At Leghorn, the shifting of cargo and passengers gave us time for a refreshing bathe and breakfast; but my comrade, being dyspeptic soon after leaving the port, chose to consider himself in for an attack of dysentery, and insisted on a dose of opium. Let my experience of amateur physicking be a warning to others in similar circumstances! The box said, "Two pills at a dose," and he accordingly swallowed a couple in trusting faith, becoming in a short time half-stupefied. This comatose state lasted for some hours, rendering him equally indifferent to the beauties of the Mediterranean and to the attractions of dinner, besides reducing me, the unlucky practitioner who had administered the dose, to a state of nervous anxiety as to his condition, and to the theories of Italian jurists on manslaughter. Fortunately, however, for both parties, he gradually shook off his lethargy, and brightened up, but thenceforward I sternly refused him any uncertified access to the medicine box, lest a worse thing might happen unto us.

Passing the island of Gorgona, suggestive of anchovies, and the barren cliffs of Capraja, the vessel soon neared Cape Corse, that long mountainous promontory which runs northward from the Corsican mainland, and, after a smooth run along its picturesque shores, we arrived at the quay of Bastia about five o'clock. After a smart skirmish with a tribe of hard-featured female porters, who tussled for possession of our traps, we passed the ordeal of the Douane, with only one difficulty, arising out of the untoward presence among our baggage of sundry canisters of English gunpowder. Patience and fair words, materially aided by the production of a letter we had received from the Prefect of the island, inviting us to visit the country of the great Napoleon *pour y faire la chasse*, surmounted a difficulty which promised at the outset to end, at the very least, in the confiscation of the articles, and we were soon seated at the *table d'hôte* of a comfortable hotel facing the sea. At this meal my comatose friend eradicated any lingering effects of the opium by imbibing correctives in the shape of sundry tumblers of very palatable *vin du pays*. After a moonlight stroll, we went early to bed, but, alas, not to sleep, for, owing to a methodical perversity of the natives, who regularly take down the mosquito curtains at the beginning of September, no matter what the weather may be, the active little animals, scenting out strange blood, sang the "hallali" over our defenceless forms, and came at us from all sides. Sleep being a farce, so soon as the sun rose in all his radiance over Elba, we sallied forth to cool our irritated skins with a bathe, being, however, cautioned

by a friendly native to keep one eye open (my companion had but one available, the mosquitos having effectually closed the other) for sharks, which, sometimes, as he averred, frequented the coast. However, we swam about in peace, undisturbed by any marine beings, save by some fisher folks, who stared aghast at the two foreign lunatics, who were actually bathing in September! Before returning to the inn for breakfast, we strolled through the town, which stretches up the hill by a wide street from the Marina, and contained some handsome buildings, with reasonably good shops; amongst others, the large publishing house of Fabiani, where we procured, for the small cost of one franc, Marmocchi's excellent handbook to Corsica, containing a very exhaustive monograph of the island. Taking the diligence for Corte, we left at noon, by an excellent road, skirting the plains and the great lagoon of Biguglia, a reedy *étang*, swarming with wildfowl in the winter season, but, in autumn, having a bad name for malarious exhalations. Black hairy-woolled sheep were grazing on the slopes facing the sea, a white sheep being the proverbial *bête blanche* of Corsican flocks, as a black one is to northern shepherds. From their straight fleeces, half hair and half wool, the native frieze, called *pelone*, commonly worn by the peasantry of the island, is woven. The great plains which stretch along the eastern side of the island have been formed during the lapse of countless ages out of the silt and detritus washed from the hills by numerous streams, which, debouching from the hills, now wind their sinuous and sluggish course to the sea, through a wilderness of brushwood and rank grass. Just inside the present coast line is a fringe of marshy lagoons formed in a similar manner by the rivers, which, unable to find their natural outfall, owing to the silting up of their mouths, diverge into these pools, abounding with wildfowl, and reeking with the deadliest malaria. Till the autumn heats are passed, the plains are untenanted, save by the flocks and herds, and the few fever-stricken peasants who tend them; yet the ruins of several Roman towns, of which mention is made by Seneca and other authors, remain to testify that at one time the climate was not so baneful. Still, even in Seneca's time, the Corsican littoral was the "Cayenne" of the Imperial Rome. At that epoch, in all probability, the rivers ran more freely to the sea, and the lagoons were probably not yet in existence, for the coast line is now some miles beyond the sites of Porto Vecchio, Aleria, &c. It was refreshing to leave these broiling flats for the rocky banks of the Golo, a mountain stream which has its source in the upland canton of Niolo, and here dashed down by the roadside, between rocks of marble veined with every shade of colour. At Ponte Nuovo, higher up, we saw the spot where, in 1769, was fought the disastrous battle in which Corsican independence was finally crushed by the French troops. The patriots fought with desperate heroism, but, decimated by the steady platoon fire of the royal battalions,

finally broke and fled in all directions. Paoli, recognising the hopelessness of further resistance, withdrew into exile, accompanied by a large number of his countrymen, who preferred expatriation to submission to foreign dominion.

At Corte we found a courteous missive awaiting us from the Prefect, which authorised us to shoot when and wheresover we liked, and directed us to apply to the local *Mairè* for any further information we might need in the arrondissement of Corte. The French Government had, since the year 1854, prohibited the carrying arms of any description, even to fowling-pieces, by the Corsicans, except on certain specified days in the year, called *jours de battue*. This enactment was made with the laudable intent of extirpating the practice of Vendetta, the curse of the island in all ages. In 1870, however, the Assembly of the island carried a resolution against the Government, repealing this prohibition, and establishing the regulations about carrying arms then in force throughout France. The manufacture of stilettos, for which the island was famous, was likewise strictly prohibited under severe penalties; a *brutum fulmen*, apparently, for we found little difficulty in procuring specimens from a respectable cutler at Ajaccio. Very elegant and lethal weapons they were, the blades being scrolled with rude arabesque, bearing the word "Morte" on one side, and "Vendetta" on the other, the hilts and sheaths being tastefully inlaid, and furnished with silver-chains. The "ladies' dagger," especially, was a very dangerous little toothpick, but whether the Corsican dames really habitually wore such ornaments in daily life, may be doubted. Well-informed people in the island expressed doubts whether the mischief would be permanently eradicated by the penal enactments, so engrained was the system of blood-feud in the family history and traditions of their country. Since this opinion was expressed, certain ugly assassinations have proved that the snake was merely scotched, not killed.

But to return to the subject of game. Courteous as the Prefect's authorisation had been, it could not be given to us exclusively, but was of necessity extended to all the inhabitants of the district, by whom, accordingly, our visit was looked upon as a sort of godsend. Nor did we find much beyond partridge and quail, the deer and wading birds being mostly found only in the plains, while the chase of the wild boar was a delusion. The moufflon, or wild sheep, formerly a native of all the highlands of Central and Southern Europe, but now only found in the mountains of Corsica, Sardinia, and Crete, and supposed by naturalists to be the parent stock of our domestic breeds, is only to be found among the crags near the snow-line. The Corsican moufflon differs from its Sardinian congener in the curve of the horns, which incline backwards, while those in the sister island usually bend slightly forwards

and outwards in a semicircle. The Corsican deer is supposed to be a distinct species from any other variety of the cervine order, differing alike from the red and fallow deer of Europe, from the stag of the North African highlands, and also from the three distinct species found in Central Asia. Hares, partridge, snipe, woodcock, quail, duck of various kinds, with numerous wading birds, complete the game list of the island, to which must be added thrushes, which, celebrated at Roman feasts in the days of Horace and Juvenal, are equally esteemed at the present day, when a diet of lentisk berries has plumped them out for the table. It was tantalising to know that the best shooting ground lay in the plains, where we could not venture at this season, for fear of malaria.

Corte is picturesquely situated almost in the centre of the island, at the junction of the Restonica and Tavignano, two rocky streams which descend from the snow-tipped ranges of Monte d'Oro and Rotondo. The latter peak is about 9,000 feet high, according to a recent survey, and must command a fine view of the island on all sides; but its ascent is a tough climb, and would have occupied too much time. From Gregorovius's account, a summer ramble to the sources of the Restonica, and over the watershed of the western glens, would doubtless repay any pedestrian who did not mind roughing it for a day or two among the goatherds of these wild uplands. The town itself is built up and along a great mass of rock which rises sheer from the valley, while the citadel, perched on the edge of a precipice overhanging the Tavignano, predominates over all. A fine statue of Paoli, erected to his honour (and their own) by the French Government, and in full sight of the house of Gaffori, a still earlier patriot, adorns the market-place. While we were admiring the statue, a little wizened old man accosted us, much to our surprise, in broken English, the remnant of what he had picked up while a prisoner of war in Britain, between 1811 and 1814, having been captured in one of the Peninsular battles. The old fellow's lingo was somewhat confused after fifty years' disuse, but his memory was retentive, enabling him to recall certain minute local features and landmarks at Alresford, in Hampshire, and a general souvenir of "Kelso, in Scotchland," which, it appears, was one of the depôts for the prisoners. In the afternoon, under his pilotage, we tried the Restonica for trout, but the water being low and clear, we got no sport. The water rippled over beds of many-tinted marbles and porphyries of great beauty, while here and there the banks were fringed with luxuriant royal fern (*Osmunda regalis*). Marmocchi gives an elaborate sketch of the geology of the island, which the curious in such matters may consult. Farther down the water a hospitable proprietor who spied us switching the water in vain, invited us to exchange that occupation for a seat in a shady

arbour, where he regaled us with a prodigality of fruit, including grapes, peaches, figs, Indian ditto, melons, &c., and insisted upon sending our guide with a further dessert of the same up to the hotel. More than that, the friendly squire took the trouble to walk up to the town in a broiling sun, with a couple of bottles of choice *vin du pays* from his own cellar, in order that *Messires les Etrangers* might, as he said, taste a sample of the better vintages of the district. Like most southern wines, it was rough to the tongue, but extremely palatable when tempered, native fashion, with water. The muscat wine of Cape Corse is very scarce, nor did we meet with it anywhere.

That same evening we heard, at one of the cafés, specimens of the national airs, mostly funeral laments (*voceri*), vendetta ballads, or pastoral love ditties, performed by some young amateurs of the place, who had met together for practice, and, hearing of the strangers, very civilly invited us into their *salon*. Their instruments, upon all of which every performer seemed equally proficient, and almost entirely by ear, were the violin, the six-stringed guitar, or *cetera*, and the flute. Most of the airs were of a plaintive, wailing cast, but very musical in cadence. The *soirée* ended with the biggest and most potent bowl of rum punch which it had been our fortune to partake of; that special brew being selected in compliment to our supposed national penchant for rum, which, however, seemed equally palatable to Corsican palates. More singing, varied by toasts to England, Corsica, &c., brought us to the small hours, and we adjourned home in some doubt as to our capacity for shooting straight on the morrow. But, except for a supicion of headache, we awoke all right, and sallied forth to the hills, where the authorisation of a *jour de battue* had brought out every available shooting-iron in the country, and we took our way over slopes covered with fragrant cistus and other scrub, in a long line, preceded by an advanced guard of dogs of no particular breed, whose conduct was highly irregular, not to say irritating. Did a partridge or quail fall to any barrel (or rather, I should say, to the converging fire of half-a-dozen), it was expedient to hasten forward at once and retrieve it from our canine friends, who, being large of jaw, and keen of appetite, seldom made more than two bites of a partridge or one of a quail. The game was not so abundant as might have been wished; the pastures, too, were tangled with a thorny mat of brambles and other trailing plants, which rooting into the ground every few feet, had an unpleasant knack of tripping us up, until we learned to lift our feet high as if on the moors at home. To make amends, however, this sort of ground was a sure find for quail. Altogether, though the day was sultry, we got a fairish bag, over and above what went down the dogs' throats, but not sufficient to tempt us to a second tramp in the afternoon.

The next day we set off on mules for a mountain village some ten miles distant, bivouacking at a cottage, where we were nearly devoured by hopping, crawling, and flying things innumerable, and spent two days in beating the wooded hills, getting no shot at the wild boars we were in search of. The whole sporting (*i.e.*, poaching) fraternity of the neighbourhood, and a miscellaneous tail of wiry dogs, assisted us, but only one boar was unharboured, which, after giving two of the dogs ugly rips as he dashed through them, got clear off among some rough ground, without affording a shot. Finding that boar hunting was a snare and a delusion, we ordered out the mules, and returned to Corte, deaf to all suggestions of trying one more day in a likely part of the mountains, and started the next morning at 5 a.m., in the diligence, for Ajaccio.

Vivario, where the stage halted for breakfast, commands a fine view of the quartzose peaks of Monte Cardo, glistening in the sun like driven snow, and the whole chain of mountains in its vicinity. A short distance further the road entered the forest of Vizzavona, winding up by a gradual ascent of many miles to the Col di Vizzavona, about 4,000 feet above the sea level, and not far from the village of Bocognano, embosomed in its chesnut groves. The forest was mainly composed of the Corsican pine (*P. Laricio*), some being splendid timber, interspersed occasionally with beech, holly, and other trees. The forest covers both sides of a deep valley, while above the trees masses of granite splintered up against the blue sky in a variety of needle-shaped peaks. The ground was everywhere studded with pink cyclamen, and, here and there, large masses of the Continental mistletoe (*Loranthus*) hung from the pine branches, which were further decorated with pendant streamers of grey moss. At Bocognano six stout mules were put to, and, leaving the wooded slope, which in old days had an evil repute for brigands, the coachman whipped up his team with yells of "Via! via!" and portentous flankings from his formidable whip, the heavy vehicle thundering down the incline to the western coast for several miles without stopping, until we reached the Gulf of Ajaccio, in time to see a magnificent sunset over the bay.

The approach to the capital winds along the curve of the bay, overarched by an avenue of elms, which at the crest of the hill where the Corso, or Rue Napoleon, commences, are replaced by a double row of orange and citron trees. At a large and comfortable hotel on the Place d'Armes, close to the sea, we got excellent accommodation and fare, including all extras of every description, for only six francs a head per diem. Fresh sardines and anchovies, delicate little mullets, crawfish, partridges, quails, and plump thrushes, with a variety of salads, in which watercress gladdened our northern tastes, together with tolerable *vin du pays*, and fruit of all kinds, formed the daily fare twice a-day, a very

agreeable change from the indifferent, dirty *cuisine* at Corte. Classical readers will recollect that the mullets of Corsica were famous in the days of Juvenal, who appreciated anything delicate, and I hereby endorse his verdict.

The next morning we paid our respects to the Prefect, to thank him for his courteous civility in forwarding our shooting plans. We were received with that invariable urbanity which distinguishes French officials of the better sort. The prefecture was a handsome Italian building, fronted by a garden blazing with masses of geranium, lantana, &c., grouped round the stems of two large citron trees in full fruit. Thence we strolled about to see the place, which forms, from every point of view, a lovely picture. Mr. Lear has done full justice to it in his sketches, though they sadly lack the colour which is such an element of a Mediterranean sky. From the rising ground, a little to the west of the town, Ajaccio, backed by the mountains of the interior, its shining edifices relieved by masses of foliage, and topped by the cathedral dome, and tall campanile, presents a perfection of rare beauty, set in the blue sea. Its value, as a winter place for invalids, has lately been dwelt upon by various travellers, and, except for a lack of English comforts, might be a very tolerable winter resort, though inferior to Mentone, or San Remo. The Jardin Pepiniere, near the town, though not very trimly kept, was interesting from its richness of contents, ranging from the elms of the temperate zone to tropical and sub-tropical forms of vegetation represented by the cochineal cactus, which was flourishing in the open air, with the insects thereon; pepper-trees, with pendulous strings of fruit, oranges and lemons, sugar-cane, jujube, &c.; and in the middle a large coral tree (*Erythrina Cristagalli*) in gorgeous bloom. On returning to the city, my companion preferred toying with grapes on the shady side of the market-place, whilst I started for the so-called "Napoleon's Grotto," the historical value of which is treated with considerable scepticism by the people of Ajaccio. Indeed, all of them, except the officials whose duty it was to uphold everything Imperial, seemed painfully indifferent to the relics and associations connected with the Petit Caporal, whose fame has saved their country from oblivion. The tale goes that the future Emperor was fond of retiring to this cave, with his books and toy cannon, and, as it was on his father's land, and commanded a fine view of the gulf, it is possible that he not unfrequently did play truant there. But "Apres! bah! blague!" as an irreverent citizen remarked to me. Stripped of its romance, it is a very dirty cave, overgrown with prickly pear and other scrub, and by no means, except for the view, worth the walk in a broiling sun. Although at St. Helena, Napoleon affected a sentimental longing for the aromatic breezes of his native hills and dales, during his term of power, he studiously ignored

istence, giving it nothing but good words and shabby treatment.

In the evening, the whole population seemed to turn out, by common consent, to enjoy the cool breeze in the Corso. Among the crowd were some picturesque Arab prisoners from Algeria, who, stalking about in their white bournouses and slippers, "lent," as Mr. F—— would say, "an Oriental tinge to the scene." We duly visited the Casa Buonaparte and attendant relics, the custodians of which, oblivious of the fact that the place was twice sacked and gutted by the mob in 1793, besides doing duty at a subsequent period as a barrack for the English troops, stoutly maintained that the furniture, &c., was exactly as it was when the famous infant was born. We even saw the very bedstead, &c.; such is the farce of keeping up the Napoleonic idea.

Although by this time September was far advanced, the intense heat obliged us to bathe not later than seven a.m., if we desired anything short of a semi-tepid bath. To the natives, bathing at all, after "the season" for such washing had passed, was viewed as little short of heresy, and various were the evils predicted to our rashness. One delightful morning we rowed far out into the gulf, and took a satisfactory header. While we were dressing, the old boatman edified us with an account of his services as a pilot on board the flagship of Lord Nelson, when the latter was watching the Toulon fleet by a line of repeating frigates from Maddalena and Ajaccio to the French coast. Judging from our informant's present age, we privately computed that at the time specified he must have been, at the most, two years old; but we forbore to undeceive him, and tipped him an extra half franc for his legends. Probably he imparted the news of our gullible generosity to his brethren, more than one of whom subsequently beset us with offers of swift and easy-going feluccas, &c., one and all resting their claims to employment on the fact that they, too, had served under the immortal "Neptune," as, by a not infelicitous blunder, the hero was designated.

Having nearly exhausted the lions of Ajaccio, and tried some of the native tobacco, which very tolerable in cigars, was fairly detestable in a pipe, being put out in the rough leaf to dry at the shop doors, without, apparently, any other curing, we took the diligence for Vico, a small town lying among the hills, some twenty miles north of the capital. From the crest of the ridge which parts the watershed of the Graome and Liamone valleys, one of our fellow-travellers pointed out Carghese, on the Gulf of Sagone, towards which the road now began to descend. This village was founded in the sixteenth century by some Greek exiles from the Morea, and, *on dit*, their descendants at the present day still employ the Hellenic language in family converse; a dubious relic of antiquity which we had no means of verifying.

Crossing the flat valley of the Liamone by a long wooden causeway

and bridge, the road once more ascended between hills thickly covered with the usual *maquis* of tall heath, arbutus, &c., the former being, in many spots, upwards of eighteen feet high, and the arbutus bushes, loaded with large clusters of ripe fruit, carrying thirty or forty berries to the branch—scarlet, orange, and gold. This berry is a favourite food of the red partridges, which, unlike their grey congeners, are, by no means exclusively insectivorous in diet. Among the sunny rocks by the roadside, a pretty little bulb was in flower, a pure white bell, almost the size of a lily of the valley, striped with delicate pink, and set close to the top of a hair-like stalk, from three to four inches in height. Vico's one inn was bare and comfortless, little better than a superior *auberge*, except for the cookery, which was fair enough. The town is built high up along a steep wooden declivity, on the opposite side of which stands a great Carmelite convent, celebrated, amongst other things, as the early school of Count Pozzo di Borgo, the celebrated diplomate. Eastwards, in the direction of the baths of Guagno, a mineral spring of some note, there rises a long serrated ridge called, from some legend now lost to history, La Sposata. Specious hope once more deluded us to a boar hunt; the whole canton was alive with dogs and guns; and even the *gensdarmes* seemed to consider us "some pumpkins," as personages important enough to have been preceded by a special missive from headquarters, directing that the two Englishmen might choose their shooting-ground and days at discretion. This obliging attention had, as we found, proceeded from the Prefect. Except, however, for the satisfaction of affording the sportsmen of Vico an unexpected gunning, the day was blank, and intolerably hot; nor was standing sentry at convenient posts of observation for boars which did not appear, by any means a lively amusement. A few partridges and quails summed up the day's sport; but the general dulness was somewhat relieved by a ludicrous mistake as to our status in our own country. We had been much puzzled to account for the unusual deference paid to us by the elders of the party, until at length a chance remark cleared up the mystery. It appeared that a young lad, either from misinterpreting our indifferent Italian, or, possibly, from a mischievous desire to get a rise out of his seniors, had told them he understood from the driver of the diligence, that we were notable officials at the Court of her Britannic Majesty. The Prefect's shooting firman, and the prompt zeal of the *gensdarmes* in forwarding our sporting arrangements, seemed, in their eyes, to give some colour to this idea, until a chance remark inducing us to question them more closely, the delusion came to light, and caused no small merriment on both sides; indeed, it was a standing joke during the rest of our stay in the town, the only victim being the youth who had brought scorn upon his elders, for which, metaphorically and practically, he "caught it."

Being fairly sick of boar-hunting, we hired a couple of horses, and set off soon after sunrise for the forest of Aitone, which clothes the western slope of the mountain-chain which divides the cantons of Evvisa and Niolo. Halting for breakfast at the village of Cristanaccia, we reached the skirts of the forest after about four hours riding, expedition being sorely impeded by the sluggish nature of our animals, whose flanks were impervious either to whip or spur. The forest was finer than even Vizzavona, containing magnificent timber, while the ground was quite brilliant with cyclamens, some of the masses of rock being studded all over with them. These great pine forests are very bare of animal life, and, compared with our northern woods, very silent, for, except the occasional scream of a jay, or a glimpse of an eagle or hawk soaring above the tree tops, there seemed to be no living thing therein. But they would be a paradise for capercailzie. After crossing the Col d'Aitone, the ground slopes down eastward towards the Valdoniello, and the view on every side was grand indeed; but we were rather over hungry for sentiment, and appreciated the hospitality of the forester's house, occupied by the woodmen of a French company, who had bought the right to "exploiter" the forest for ten years, at the rate of 100 large trees a year. They regaled us with salmi of duck, capital wine, and a cup of that delicious coffee which seems unattainable in Britain; nor would they hear of remuneration. They had one of the immense Pyrenean sheep-dogs with them, who, strange to say, was a strict vegetarian, invariably refusing meat of any kind—a singular taste for a fierce dog. We were obliged to get on horseback again early, reaching the Col in time to see a splendid sunset, which lighted up the vast basin of forest beneath us, and bathed the intersecting range of mountains towards the Gulf of Porto in mellow light. We cleared the forest just before dark, and upon reaching Vico, somewhat tired with the long day's ride, found an invitation to attend a dance, given on the occasion of a bourgeois wedding. Though not in exact dancing trim, we could not resist this; so finding our way up a dark stair, we were ushered into a large, dimly-lighted room, filled with the wedding guests. After paying our respects to the bride—who, strange to say, had a good-sized baby in her arms, but of this more anon—a pretty young woman with golden hair, who lisped her thanks in musical Italian for our congratulations, we were introduced to some fair partners, and joined in a mazurka to the music of two guitars and a yelling flute. Between each dance there was a hospitable, but alarming practice, of handing round glasses of neat cognac or rum, which it was *de rigueur* to empty to the health of the happy couple, or of our partners. For the credit of the ladies, it must be stated that they were more moderate in their drinks, contenting themselves with orgeat, "delices les dames," or other syrups, whose name in Corsica is legion. After

duly swallowing two glasses of raw spirits, we began to feel nervous for the stability of our legs and wits, and, accordingly, at the risk of being put down as poor weak creatures, we begged to be permitted in future to join the ladies in their milder beverages. Being obliged myself to return to Ajaccio the next day, I contrived to slip away early, leaving my agile comrade to maintain the reputation of the Britishers with the good-humoured damsels, who seemed to look upon us with that sort of curious respect which we at home might bestow upon a couple of wild Indians, and as we were in travelling costume, knickerbockers, and all the rest of it, no doubt voted us a couple of guys. Most of the girls were fair, nay, even red-haired, with clear complexions, and blue eyes. Raven locks, &c., were scarce among them, and there was as much auburn hair as in any district of the Highlands. Some ethnologists, I am informed, are inclined to trace this to the admixture of Greek and Saracen blood in the ancestry of the Corsican nation; but as for that "I kenna." Before quitting the subject of the dance, I will explain the bride's baby, as to which apparition we were curious, but forbore any indiscreet questions at the time. It appears that among the countryfolks it is not unusual for a young couple, after formal betrothal, if they are too poor to provide the requisite church dues and other customary wedding expenses, to anticipate the sanction of the church by mutual consent, sometimes for a considerable period. The ceremony is invariably performed, sooner or later, with all due formality, and, while little or no scandal attaches to the practice, it is quietly winked at by the easy-going parochial clergy; such, at least, was the explanation given to us: Evil to him that evil thinks!

I had a terribly sultry ride to Ajaccio, the more tedious, that my beast of burden was too fatigued with his previous day's work to be much pressed, except in crossing the Liamone valley, which I galloped across in hot haste to avoid risking a touch of malaria. My friend had a sample of its evil repute for *fièvre*, a day or two later, when out shooting on the adjacent hills; for, though none of the sportsmen actually descended into it, all but himself and two others of the party were down the next day with fever. A hasty visit to the College Fesch, at Ajaccio, a glance at the gallery of pictures (formerly at Rome, and bequeathed by the Cardinal to the institution which he had founded for the youth of his native town), and visits of ceremony and thanks to the Prefect and others, completed my experience of Corsica, which I left at 2 p.m. by the steamer for Marseilles, reaching the quay of La Joliette after a calm passage of twenty-one hours.

If the foregoing sketch of travel is somewhat devoid of stirring incident or thrilling adventure, I must plead in defence that nothing very sensational came in my way. I *might*, indeed, following the example of a certain Spanish tourist, have spiced the narrative with sketches of

"what might be supposed to have takenplace" *ad libitum*, but then this could easily have been accomplished without leaving the land of Cockaigne. I shall be satisfied if my experiences of Corsica should tempt any future tourists thither, who, having more time at their disposal, I would recommend to land at Bastia, visiting from thence the district of Cape Corse, returning by San Fiorenzo and Mŭrato to Ponte alle Leccia, thence up the valley of Niolo (the gem of the whole island, according to general report, which, much to my regret, I had no time to verify), over the Col d'Aitone on horse or mule-back to Evvisa and Vico. From Vico the baths of Guagno might easily be visited, whence, if the traveller be a keen mountaineer, he can scale Monte Rotondo, or throw his fly in the mountain tarns of Ino and Creno. Next to Ajaccio, and so by Sartene to Bonifaccio. From the Straits he might (unless tempted over to Sardinia) return by the valley of Taravo to Bastelica, Vizzavona, and Corte, leaving the island either by Bastia or Calvi; or, if in late autumn, diverging to the plains. An excellent map of the island, published by the French War Department, can be bought in Paris for four francs. Good roads, fair inns, and, where the latter are absent, a kindly hospitality extended to strangers, will enable any but the most fastidious traveller to enjoy himself without reserve. The pick of the scenery can be visited without inordinate racing in about five weeks or less, amidst a population friendly and frank, though a trifle haughty and touchy on certain weak points. Let the British tourist be especially careful about offering money in recompense of civilities, at any rate until he has delicately felt his way. Many services will be cordially rendered him by people dressed in country garb, and speaking a rough patois, but whose family may number a list of ancestors more remote and illustrious than half of those recorded by Debrett. Such men are as sensitive as Highlanders, and their pride of birth would flare up at any awkward mistake, such as an offer of money.

In late autumn, or winter, sportsmen would get plenty of good mixed shooting, especially in the plains, where the game is very thick, and in several of the upland districts fair sport is to be relied on. In winter a persevering shot might even bring down a moufflon or two. If the traveller has antiquarian tastes, there is plenty of food for him; the geologist or botanist can likewise revel to his heart's content in a rich field of exploration in all directions; and, as yet, Corsica is not spoiled by the full money-bags of fashionable excursionists.

CORRESPONDENCE.

NEW SOUTH WALES TO INDIA, *VIA* TORRES STRAITS.

Berwickshire, Coconada, Coromandel Coast,
August 1, 1878.

To the Editor of the Nautical Magazine.

SIR,—Knowing you are at all times ready to add to the pages of your valuable publication any subject that may be of use to shipmasters, I now beg to give you a brief abstract of my passage from Newcastle (New South Wales) toward India, *viâ* Torres Straits, thinking it may tend to do away with a great deal of the dread hitherto felt by many shipmasters (myself included until now), and give them more confidence in taking that route. I do not consider Torres Straits any more difficult or dangerous than many other narrow waters in the Eastern hemisphere that are more commonly used.

I sailed from Newcastle on June 2nd, but made slow progress, with northerly winds the first six days, after which we took wind from E.N.E. until in lat. 14° S., where we took a westerly wind, with rainy weather (not a common occurrence at that season), after which we got the easterly monsoon, and at noon, on June 21st, were close to Bramble Cay, in the great north-east channel. Seeing that I could get no further than Stephens Island by dark, and not caring to anchor under that island, I decided on keeping the ship between Bramble Cay and Stephen's Island, where there is plenty of room, until daylight the next morning; so brought the ship to the wind on port tack, under topsails and jib, at 1 p.m., ship heading S. by W., touching in the wind, making but little headway, Black Rocks then bearing N.E. about two miles.

At midnight, wore ship and headed E.N.E. until 4 a.m.; then wore round on port tack and sat courses, steering S.S.W., close to the wind. A fresh wind blowing all night, with dark cloudy weather.

At daylight, on June 22nd, made sail, and steered S.W. $\frac{1}{2}$ W. for Stephens Island, which was abreast at 7 a.m. At 9.40 a.m., abreast of Rennel Island; and at noon, abreast of Cocoa Nut Island. At 2.30 p.m., passed Nine-pin Rock; and at 7 p.m., cleared Torres Straits (by Prince of Wales Channel), having gone through the whole distance without letting go an anchor; the whole time occupied being thirty-one hours, seventeen of which we were dodging.

I feel it my duty to recommend the Torres Straits route from Australia to India (during the easterly monsoon); but should advise the great north-east channel being used, both for safety and speed, and think it

better than going round *viâ* Cape Leeuwin, at the very worst season of the year, against heavy gales and high seas, straining the ship and its gear, and most probably losing a great deal of time.

Yours truly,

WILLIAM NOTT, Master, *Berwickshire.*

ON THE PASSAGE FROM NEW SOUTH WALES TO HONG KONG.

To the Editor of the Nautical Magazine.

SIR,—Perhaps you will allow me to preface my notes on the above passage by the following remarks. I have been a subscriber to the *Nautical Magazine* for several years (though never before a contributor to its contents), and I look upon my thirty volumes as the most useful sailing directory I have. Therefore, I have been sorry to notice, during the last two years, a falling off in the articles on pilotage and ocean routes. These contributions are the most important part of the work to the merchant skipper.

But, perhaps, Mr. Editor, this is not your fault, and rather lies with the officers of the Navy and Merchant Service, who will not contribute to this useful part of the *Nautical.*

We, of the Merchant Service, have most of us had to "buckle to" early in life, and have spent the years in "pulling and hauling" that, if passed at school, would have made writing our sea experiences easier to us. It is the fear of committing a few grammatical errors that keeps much practical knowledge out of your pages.

A letter from you in the *Nautical*, inviting men to send you their notes on little known and unfrequented routes, might have good effect.

I have a few words to say about the relative merits of running the easting down on a voyage to Australia, north of 43° and south of that latitude. I left England in December, bound to Sydney, and crossed the meridian of Greenwich in 39° south, and ran down my easting between the parallels of 42° and 43°. The reason of my not going further south was the crankness of the ship I commanded. On these parallels I had most unsteady winds, veering round the compass almost every forty-eight hours; fourteen times in eight weeks I had short gales in excess of 8 and up to force 9 Beaufort scale, these breezes were always either northerly or southerly; no westerly winds of any steadiness were experienced at all. Once, from the S.E. to S.S.E., the wind for thirty-six hours was between 10 and 11 Beaufort scale. Of course I felt I was in the wrong latitude to make a passage, but I was reluctant to go further south for the above reason. On arriving at Sydney I found that

several smart ships had run their easting down nearly on the same parallels and had all made long passages, and in their reports published in the Sydney papers spoke of the absence of all steady westerly winds. The only four ships that I heard had made good passages ran their easting down south of 45° and 46°, and had fine steady westerly winds. The above remarks, I think, confirm, or tend to confirm, Maury's recommendation of a high parallel in running the easting down. On this route the weather is often thick, and a very sharp look out is necessary for icebergs. I passed a large one in 42° three years ago. Where is the celelebrated tea clipper *Ariel?* Most likely she ventured rather too far south, and struck an iceberg some dark, dirty night.

Not having made the passage from New South Wales to China before, while at Sydney I got all the information I could about the different routes, winds, currents, &c., and the route recommended most I took—viz., from Newcastle I steered for Lord Howe's Island, and passed to the southward of it; thence on a northerly course to midway between New Caledonia and the Fairway reef; thence to east of St. Christoval, of the Soloman group; thence north, passing between Ponapi and Mokil Islands, of the Caroline group; through the Mariana group; thence direct to the Balingtang Channel. Sailing on this route, I had generally very light winds, with the exception of three days near the Caroline group, when the weather was very dirty: terrific squalls and torrents of rain. Again, about 100 miles east of the Bashees, we had three of four days equally threatening weather. I was fifty-two days on the passage. Messrs. Green's ship, *Windsor Castle*, left Newcastle ten days later than I did, and we were in company during the last four days of the voyage; the sailing powers of the two ships being about equal. A day or two after my arrival at Hong-Kong, I went on board the *Windsor Castle*, and asked Captain Harrison (who commands her) to allow me to look at his charts. On doing so, I found his route had been far to the westward of mine the whole way, and, though there was only a day's difference in the passage to the equator, he picked up the ten days (he had gained on me) from there to the Bashees. His route on leaving Newcastle was N.N.E., passing between the Kenn and Bellona reefs; then north, passing to the eastward of Mellish and Pocklington reefs; thence N.N.E., passing between New Ireland and Bourganville Island; thence westward of the Pellew Islands direct to the Balingtang Channel. The currents we both experienced were much the same, mostly westerly, from eighteen to thirty miles a day.

The German ship, *Solo*, came through Torres Straits, Manipa Straits, Pitt's and Molucca passages, and Basilan Straits across the Sulu Sea, and through Mindora Straits into the China Sea, thence direct to Hong-Kong. She was fifty-three days making the passage.

The *Psyche*, British bak, came *east* for New Caledonia, and made the passage in seventy-eight days, I believe.

The *Argonaut*, British ship, took nearly the same route as the *Windsor Castle*, and was about forty-nine or fifty days on the passage.

There were several other vessels arriving from Newcastle at Hong Kong during my stay there, and their reports showed that those who went furthest east made the worst passages, and the *Windsor Castle*, by making as direct a route as possible, made the best. All this tends to prove, I think, that leaving New South Wales in February, March, or April, the passage as direct as possible, up to between New Ireland and Bourganville Island, is the best, and that going further east, in the expectation that fresher winds will compensate for the greater distance, is a mistake.

I shall hope, at some future time, to contribute again to your pages, following humbly in the footsteps of Captain Pollock and others, who have made the *Nautical Magazine* so valuable to the navigator.

I remain, your obedient servant,

THOMAS DONKIN, R.N.R.,

Commander of the ship *Inverness*.

BOARD OF TRADE SURVEYORS, AND BOARD OF TRADE CIRCULARS.

Earle's Shipbuilding and Engineering Co., Limited,
Hedon Road, Hull, 10th September, 1873.

To the Editor of the Nautical Magazine.

SIR,—We have always had the impression that the certificate given by the surveyor to the Board of Trade was given after having surveyed the completed vessel equipped and ready for sea.

We find nothing in the Merchant Shipping Act giving the surveyor to the Board of Trade authority to interfere during the building of the vessel. But, latterly, in a case coming under my observation, the surveyor inspected a vessel when only in frame and partly plated. Will you do me the favour to inform me whether, if no power is given by the Act, can the Board of Trade give authority in such a case? Will you also kindly tell me what legal authority attaches to the circulars issued by the Board of Trade, and whether I can get a complete copy of these circulars? Your reply will greatly oblige.

I am, dear Sir, yours very truly,

JOHN HEWETT,

Secretary of Earle's Shipbuilding and Engineering Co., Limited, and Subscriber to the *Nautical Magazine*.

The practice of the Board of Trade surveyors is, so far as it has come within our knowledge, to inspect ships, boilers, and machinery, under construction, when they are called in to do so, and when they conveniently can, whether they are called in or not. In fact, one of the grounds on which a favourable declaration is granted, is, we have always understood, that opportunities are afforded for inspection of boilers during construction. We are not aware that any surveyor can "interfere" during the building of a ship, but he has, from other sources than his appointment as a surveyor, ample powers to inspect ships whilst building, to point out defects that may materially interfere with the issue of a declaration for the full period; and to decline to give a declaration subsequently if he sees anything unsatisfactory or doubtful. The survey of a new steamship, after she is complete with her boilers in, and she is ceiled, painted, and cemented, is of but little practical value, and is, in fact, sometimes but a survey of paint, &c. We have known cases in which surveyors have declined to give their declaration at all, in the case of a new ship brought to them complete, and of which they have had no previous knowledge, and, we think, they are right. They have to make a solemn declaration that the ship "is sufficient for the service intended and in good condition," and are subject to severe penalties for making this declaration falsely, or on insufficient grounds. It is not easy to see how an examination superficially of a painted and cemented and ceiled structure can enable a survey to make a solemn declaration that that structure throughout—hull, equipments, machinery, construction, and workmanship—is sufficient for dangerous sea service. We are fully aware that surveyors, knowing the character of the builder, do occasionally give such a declaration for a complete ship; but we also know that in some cases where this has been done the ship has come to grief from inherent weakness within a short period. In fact the Board of Trade have certified a weak and dangerous structure. It has been suggested by some of our correspondents that, in the interests of owners, seamen, passengers, and underwriters, no Board of Trade Surveyor should give a declaration of sufficiency for twelve months, unless he has seen the ship under construction, and can give it from his own personal knowledge of the whole structure, and if we had to grant declarations—seeing that the surveyor is (subject to Board of Trade instructions) wholly responsible—we should, for our own security, decline, in many cases, to "declare" that a ship is throughout and entirely sufficient for twelve months, for we should have to do so on the mere chance of examination afforded to us of a ship after she is complete and afloat. Many of the large shipbuilders fully appreciate this, and encourage the Board of Trade officers, and give them special facilities for examining ships under construction.

As regards your question as to the power of the Board of Trade

surveyors to inspect ships in frame, we would recommend you to address the Marine Department: as mere surveyors we do not think they have the power to make a forced inspection at all, but from a reference to the Acts, with which we are tolerably familiar, there can be no possible doubt that under Sections 321 and 14 and 15 of the Act of 1854, and under the more recent Acts relating to surveys and tonnage admeasurement, those surveyors, who have the powers of inspectors, have ample means of making surveys of ships from the time the keel is laid until she is launched. We are aware that the Board of Trade officers do not visit yards oftener than they can help.

As regards the Board of Trade circulars, the Act, Section 307, distinctly provides that the surveyors shall execute their duties under the direction of the Board of Trade, and it gives that board power to "make regulations." We presume that under this section and under other sections equally wide in other Acts, the Board of Trade issue directions by circular. But, whether this be so or not, it is obviously to the advantage of all concerned, that instead of making hole and corner regulations, of which the surveyors alone should be advised, the Board of Trade should make known to the public the rules on which their surveyors act.

The whole gist of the question seems to us to be that it is absolutely within a surveyor's power to decline to give a declaration at all for any ship, machinery, boilers, or equipments unless he is, within his own mind and of his own knowledge, in a position to "declare" honestly that they are "sufficient for the service intended and for the time named, and in good condition:" and it would appear, as far as we are able to judge, that in order to insure uniformity at the various ports and to facilitate business, the Board of Trade issue instructions to inform surveyors what they may safely regard as efficiency. By this means there can be no doubt that the department directly takes on its own shoulders a large sharge of the responsibility of the surveyor. If a surveyor were to disregard his instructions he would be in a sorry plight, were it not for the controlling power given to the Board of Trade, and were it not for the Board of Trade instructions, the responsibility attaching to any surveyor of the Marine Department will be greater than any man could bear, and such as it would appear to us the Legislature never contemplated.

In answer to your last question you can get a complete set of published circulars, on payment, of Mr. J. D. Potter, Poultry, E.C.

STEERING RULES IN FOGS.

To the Editor of the Nautical Magazine.

SIR,—Being myself a subscriber to your valuable magazine, and knowing

the great interest you take in all nautical matters, I now take the liberty of addressing a few lines to you on a very important matter. I have often wondered while we have the Rules of the Road laid down so clearly, that, with proper care, no mistake can be made, why is there no proper Code of Fog Signals. During the last fourteen years I have been connected with steamers, and during dense fogs. Meeting steamers in opposite courses is this, the one steamer does not know what the other steamer is doing. If there was proper signals, understood by all nations, there could be no mistake made, without gross carelessness on the part of one commander or the other.

I beg to enclose a Code of Fog Signals, adapted for ships and steamers in all the different positions of difficulty they can be placed in, and my opinion is, were the following rules strictly adhered to, no collision could occur.

I should like very much to have your opinion on the above Rules, and hoping you will forgive me for trespassing on your valuable time,

I am, your humble servant,

WILLIAM JAMIESON,

Commander S.S. *City of Limerick.*

Liverpool, 11th September, 1873.

UNIVERSAL CODE OF FOG SIGNALS, TO PREVENT THOSE DISASTROUS COLLISIONS AT SEA.

By William Jamieson, Commander, Inman Line of Steamers, Liverpool.

1st. That all steamers leaving port during dense fogs, should sound one whistle, and continue to do so while under sail or steam.

2nd. That one whistle denotes, I am steering course, or porting my helm, or under command of port helm. Two whistles denotes, I am starboarding my helm. Three whistles, that I am stopped, or reversing my engines.

3rd. That steamers meeting upon parallel lines, as soon as a single whistle is heard right ahead, with no chance of clearing each other, both steamers should stop and reverse their engines, sounding three whistles, which denotes, I am stopped and reversed.

4th. When two steamers meeting each other upon parallel lines, and both stopped and reversed, so as to clear each other, let both steamers go ahead slow, and sound one whistle each, which denotes, I am going ahead, and porting my helm, which will clear each other, or *vice versa.* Two whistles, I am going ahead, and starboarding my helm.

5th. When a single whistle is heard broad upon the starboard bow, let each steamer sound two whistles, which denotes, I am starboarding my helm.

6th. When a whistle is heard broad upon the port bow, continue the single whistle in each steamer, which denotes, I am porting my helm; will clear each other.

7th. Steamers passing each other, upon parallel lines, at a safe distance, continue the single whistle, which will clear each other.

8th. In narrow channels, or going in and out of port, if possible, let both steamers keep their own side of the channel, and act according to circumstances.

9th. In cases where steamers going the same way, with a single whistle going, is overhauling or passing another steamer, going the same way; if plenty of sea-room, let the first steamer sound two whistles, which denotes, I am starboarding my helm, and will pass you on port side.

10th. Steamers crossing each other upon right angles; when a single whistle is heard on starboard beam, and a single whistle on port beam, let the middle steamer and the one on the port beam continue the single whistle, which denotes that they are porting their helms; the one on the starboard side, sound two whistles, which denotes, I am starboarding my helm, which will clear each other.

11th. All sailing ships, under weigh during dense fogs, on starboard tack, sound fog horn twice; on port tack, once.

12th. Steamers rounding to in a river, during dense fog; if rounding with starboard helm, sound two whistles; if on port, one whistle.

Mems.—All steamers under weigh or steering a course, sound a single whistle, and all vessels starboarding, two whistles; steamers stopped or reversed, three whistles.

13th. Steamers crossing each other upon opposite courses, must act as directed above, according to circumstances.

14th. All steamers at anchor to ring a bell or sound a gong.

WILLIAM JAMIESON, Master.

[We have great pleasure in inserting the above. The system proposed is very good. It accords closely with suggestions made by another practical seaman of great ability: viz., Captain Digby Murray. We think that Captain Murray, however, proposed like signals for steam and sailing ships, excepting that the signals which are made in steamers by a whistle, should be made by a patent fog horn in sailing ships.—ED.]

COAST OF PEGU.

To the Editor of the Nautical Magazine.

SIR,—Having "coiled up my ropes and anchored on shore," it's a long time since I had anything to say in the *Nautical Magazine*, but I

can't allow the directions for navigating the Coast of Pegu, published in the *British Burma Gazette*, to pass without a strong protest as eminently dangerous to any ship following them. It is there recommended to pass the sands lying off Baragon Point in not less than seven fathoms, which I know, by experience, to be much too close to them for safety; nor is anything to be gained by shaving them so close, even in a steamer in daylight. I acquired my knowledge of their steepness by *touching* on them, thus :—

Beating to the westward, and being, as I supposed, too well acquainted with that part of the coast to apprehend danger, the leadsman gives seven fathoms; when I ordered "ready about." The next cast gave six fathoms *hard*. "Helm's alee." She came round, but struck the ground while in stay in four fathoms; and I leave it to your nautical readers to judge if this was "shaving" too close or not? This occurred before the survey of Fell and Ward was published, but my familiarity with the coast made me venturesome, and I very nearly paid the penalty. Before the publication of the late survey, I used to keep in twelve to fifteen fathoms in rounding this point or flat with a fair wind, but I was "beating," on this occasion, and borrowing on the sands for sake of the tide; but even with the chart as my *sole* guide, would not come under twelve fathoms. But these mischievous directions published by "authority" are very likely to lead a stranger into a dangerous proximity to sands which appear to be like most sands fronting the sea, as steep as a hill side.

J. H. MILLER.

Moulmein, 5th August, 1873.

STRENGTH OF BOILER SHELLS.

By a Board of Trade Surveyor.

1. The Board of Trade, while allowing their surveyors to choose their own forms of calculation, have all along recognised as the fundamental principle of their practice the following opinion, expressed by Sir William Fairbairn, in 1854—viz., "Steam boilers of every description should be constructed of sufficient strength to resist *eight times* the working pressure, and no boiler should be worked, under any circumstances whatever, unless provided with at least two—I prefer three—sufficiently capacious safety-valves."

2. In 1868, each of the surveyors was called upon to send to the Board of Trade a report, giving in detail a statement of the rules he

used in determining the working pressures to be allowed on the boilers that came under their survey, and their method of inspection. It appeared from these reports that although the arithmetical forms of calculation were not uniform, yet the results arrived at were, in every case, so nearly alike, and were also so near to the pressure required by the maxim laid down by Sir William Fairbairn, that the Board did not, in the case of any one of the reports, interfere with the method of calculation the surveyor had adopted.

3. The most of the surveyors gave as their practice a rule that had been long well known amongst engineers as "Galloway's Rule," and as both manufacturers and surveyors seemed to have the same rule, there did not appear to be any occasion for upsetting a practice that was working so well. In some of these reports, however, a matter was introduced as affecting in an important degree the practical value of "Galloway's Rule"—viz., the actual proportions of rivetted seams. It was stated that manufacturers were departing from certain proportions for which alone Galloway's Rule was applicable. As this divergence has since led to considerable misunderstanding between manufacturers and the Board's surveyors, it may be interesting to explain what has been the nature of this difference. To understand that, it will be necessary to go to the origination of the rule.

4. The rule in question was formed by the late Chief Surveyor, Mr. Galloway, as an embodiment, in a practical form, of the practice of the Board's surveyors in carrying out the principle above quoted from Sir William Fairbairn, that the actual factor of safety in all steam boilers should not be less than *eight*. The following is the rationale of the construction of Galloway's Rule:—

5. In the absence of tests witnessed by an officer of the Board of Trade, the strength of iron is assumed to be 48,000 lbs. per square inch in plates and rivets; this includes the effect of friction at the joints, and supposes the holes to be drilled, the strain to be applied lengthways to the plate, and the rivets to be Lowmoor, or equal to that in quality. When the rivets are subjected to double shear, or where the strain is applied crossways to the plate, only 43,000 lbs. is allowed as the strength per square inch of the rivet, or of the plate respectively. The other details of strength standards will be given further on; the first of these statements is all that is necessary to explain Galloway's Rule. In that rule the section of the shell is taken as the length of the boiler by the thickness of the plate; but, practically, the length of section will be greater than the length of the boiler on account of the doubling of the plates at the circumferential seams. When the double rivetting is zigzag, as it should always be in boiler shells, the section is increased about

7 per cent. by this extra material. To give effect to this, the 48,000 lbs. was increased about 7 per cent, or to 51,520 lbs., or 23 tons.

6. According to Fairbairn, the strength of properly proportioned double rivetted joints is 70 per cent. of that of the solid plate, and as the shift of butts longitudinally in the shell plating should be at least one strake, the weakest section will be alternately a solid plate and a rivetted seam, or $\frac{100+70}{2}=85$ per cent. as the average strength of the whole section as compared with the solid plate. To permit retaining the 70 per cent. as the description of the rivetting instead of altering this percentage to 85, an equivalent reduction was made upon the factor of safety 8, by substituting for it a divisor, 6·5;

$$\frac{70\times 80}{85} \text{ being nearly equal to } 6{\cdot}5.$$

7. For single rivetted seams the excess for laps is proportionately less, and the addition of strength by the shift of butts is *proportionately* more, and the resultant is approximately also the substitution of a divisor, 6·5, instead of the factor of safety, 8.

$$\text{As } \frac{23\times 2240\times{\cdot}70}{6{\cdot}5}=5550,$$

$$\text{and } \frac{23\times 2240\times{\cdot}56}{6{\cdot}5}=4440.$$

"Galloway's Rule" assumed the following form for boilers of the best construction and workmanship, the dimensions being taken in inches:—

$$\frac{5550\times \text{Twice the thickness}}{\text{Diameter of the boiler.}} = \begin{cases}\text{Allowed pressure for 70 per cent.}\\ \text{double rivetting.}\end{cases}$$

$$\frac{4440\times \text{Twice the thickness}}{\text{Diameter of the boiler.}} = \begin{cases}\text{Allowed pressure for 56 per cent.}\\ \text{single rivetting.}\end{cases}$$

8. In this form, "Galloway's Rule" became well known, but, unfortunately, those outside the Board of Trade, in many cases, soon lost sight of its fundamental principle—viz., the actual factor of safety to be 8, and of the standard of rivetting to which alone it applied—viz., 70 per cent. in the double rivetted joint, and 56 per cent. in the single rivetted joints. As with the spread of compound engines higher pressures became general, and the thickness of shell plates was increased, the 70 per cent. standard was not adhered to by manufacturers, and in some cases the strength of double rivetted joints was actually less than 56 per cent., which was the standard for single rivetting in the construction of "Galloway's Rule."

9. Manufacturers, in these cases, although they had departed so far from the principle of the rule in their proportions, nevertheless con-

tinued to calculate the pressures by "Galloway's 70 per cent. Rule," and, of course, the pressures they expected were not allowed by the Board of Trade.

10. Galloway's Rule is altered in the following way, to suit different strengths of double rivetted seams, the joints being properly crossed:—

$$\text{Rule, } \frac{(515 \times (70 + \text{Percentage}) \times \text{Thickness of plate}}{6{\cdot}5 \times \text{Diameter of boiler}} = \text{Pressure.}$$

$$\text{Or nearly } \frac{(70 + \text{Percentage}) \times 80 \times \text{Thickness}}{\text{Diameter}} = \text{Pressure.}$$

For single rivetted seams, substitute 56 for 70 in the above.

The "percentage" to be used in the above is the least of the two values found by formula in paragraph 19.

11. Mr. Galloway's Rule was made for boilers of the best workmanship, and for plates much thinner than those now common in high-pressure boilers. The increase in thickness has not only caused a departure from the 70 per cent. standard, but it has in many other respects lessened the strength per square inch of section of the shells of boilers; the bending of a plate in the rolls, after the end holes are in, is more injurious to a thick plate than it would be to a thinner one; thick plates have less tensile strength per square inch of section than thinner plates have.

12. Board of Trade surveyors have always been influenced by such considerations in fixing the pressures to be allowed on boilers. In applying to ordinary marine boilers the reductions which, according to even the most liberal interpretation of a surveyor's duty, are seen to be necessary to maintain in its integrity the maxim laid down by Sir Wm. Fairbairn, the pressures allowed fall, in many cases, far below the pressure resulting from the current misapplication of the popular form of Galloway's Rule, and the disappointment to manufacturers, and their complaints, laid at the door of the Board of Trade, should be recognised as due to themselves only, and should be taken upon their own shoulders.

13. Two courses of action are open to manufacturers, either to combat the opinion of Sir William Fairbairn and have it expunged from the standard code of engineering practice, or, on the other hand, to adopt such improved methods of construction or stronger materials as will justify a higher pressure in accordance with that opinion.

14. The responsibility upon the Board of Trade is a very serious one, but, at the same time, their duty is very clear. So long as the above statement of opinion stands uncontroverted, the travelling public have a right to demand from the Board of Trade the condition of safety therein defined. I, as a surveyor, may, or may not, consider such a margin of safety as in every case necessary, but it would never do for

every surveyor to set about experimenting with the lives of the public to discover whether he or Sir William Fairbairn were the better authority on this point. It is clearly understood that this factor of safety is a matter of settled policy, not one for the exercise of individual opinion. But what surveyors cannot do, and what even the Board of Trade ought not to do, it is still open to the great engineering lights of the day to do. They may alter public opinion, they may refute the statement on which the Board's policy rests, and they might even succeed in getting Sir William to retract his statement and to side with those who are opposed to it, and then there is no doubt that the Board of Trade would not consider it their duty to force upon the public a higher degree of safety than the public themselves cared to posses.

15. In this paper my object has been to explain and to justify the action of surveyors in fixing pressures. Galloway's Rule, although at the bottom substantially correct, was, in reality, only an empirical formula, and it is, perhaps, to be regretted that the more detailed, although less practical method originally adopted was ever departed from. According to that system the bursting pressure was calculated from the dimensions of the boiler taken in detail, and that pressure divided by *eight*, gave the working pressure.

16. In applying this principle in the case of boiler shells, the Board's surveyors do not reckon the *ends* of a circular boiler as adding anything to the strength of the weakest section, and they take into account the actual percentage of strength left in the rivetted seams, as found by paragraph 19, and they allow for the extra section afforded by the laps of the plates, or by butt straps, and by the crossing of the plates; they make the proper deductions for openings in the shell and they calculate the pressure to be allowed for the dimensions of the weakest section, not the mean of two opposite sections, but the weakest section at one side of the shell only.

17. In the absence of tests witnessed by an officer of the Board of Trade, the following are assumed to be the strengths of the materials :—

	lbs. per sq. in.		lbs. per sq. in.
Plates lengthways, drilled -	48,000	Rivets, Lowmoor, single shear	48,000
,, crossways ,, -	43,000	,, ,, double ,,	43,000
,, lengthways, punched	40,000	,, common, single shear	40,000
,, crossways ,, -	36,000	,, ,, double ,,	36,000

18. The strength of the whole of the weakest section is taken piece by piece, and the sum divided by the half-diameter of the shell is the bursting pressure.

19. The strength of the longitudinal rivetted seams in percentage of the solid plate is calculated by the least of the two following percentages :—

Plates.

$$\frac{(\text{Pitch} - \text{Diameter of rivet}) \times 10 \times 10}{\text{Pitch}} = \left\{\begin{array}{l}\text{Percentage of strength of plate at joint, as compared with the strength of the solid plate.}\end{array}\right.$$

If the holes are *punched*, substitute $8\frac{1}{3}$ for one of the *tens*. If the strain is applied crossways to the plate, substitute *nine* for one of the *tens*.

Rivets.

$$\frac{\text{Area of rivet} \times \text{No. of rows of rivets} \times 10 \times 10}{\text{Pitch} \times \text{Thickness of plate}} = \left\{\begin{array}{l}\text{Percentage of strength of rivets, as compared with the strength of the solid plate.}\end{array}\right.$$

When the rivets are subjected to double shear, the *number of rivet sections to be sheared* is to be substituted for the *number of rows of rivets*, and the number *nine* is to be substituted for one of the *tens* in the above.

When the rivets are only of common rivet iron, instead of being of Lowmoor, or similar iron, $8\frac{1}{3}$ is to be substituted for one of the *tens* in the above.

20. The weakest section may run through seams all along if the shift of butt be not sufficient, or it may run alternately through a seam and a solid plate, the latter is the line it usually takes. The strength of the shell is then nearly a mean between the strength of the seam and the strength of the solid plate, or with a 70 per cent. seam we get $\frac{100 + 70}{2} = 85$ per cent., and the extra for material in laps has to be added. The rule used for the minimum shift of butts is

$$\frac{110 - \text{Percentage of rivetting}}{\text{Percentage of rivetting}} = \text{Length of shift of butts}$$

expressed as a portion of the whole breadth of the plate.

Example.—If the percentage of strength of the seam be 70, we have:

$$\frac{110 - 70}{70} = \frac{40}{70} = \cdot 57 \text{ of the breadth of the plate.}$$

The addition of 10 to the 100 is intended as an equivalent for the metal in the circumferential laps, and to give the quotient, so that it can be applied from centre of seam to centre of seam, instead of between seams.

21. If manufacturers desire higher pressures, here is an inexpensive way to secure greater strength; economise the shift of butts, instead of always making the shift equal to half the length of the plate, make it equal to one-third or one-fourth of the length. If the length of the plate, from

centre of seam to centre of seam, be equal to n times the length of shift of butts, and if the percentage of the strength of the seam be given, we have

$$\frac{100\,(n-1)+\text{Percentage}}{n} = \left\{\begin{array}{l}\text{Percentage of strength of shell as compared with solid plate,}\end{array}\right.$$

besides the strength due to the extra material in the circumferential laps.

22. This system has never been adopted in any boiler submitted for survey, although its value in making up the longitudinal strength of a ship's hull is a fact well known to engineers. The boiler ends, never being calculated directly, may, in this way, be indirectly made available in adding to the strength elements of the boiler shell by observing that there is always a good shift left between the seams in the end and those in the extreme plates of the barrel of the shell.

23. In this journal for May and for June of last year there appeared articles on the strength of rivetted seams, both by Board of Trade surveyors. The present article, also by a Board of Trade surveyor, agrees throughout with those articles, except in one item, that here the strength of boiler plate is taken as 48,000 instead of 47,000 lbs. The values given in the present paper are in extension of the principle followed out in Mr. Wymer's paper in the May number, which applied only to equal values for the strength of rivet and of plate.

24. If the plates of the shell are not of excessive width, say total with not more than 40 times their thickness, the above principles would be applicable, and with rivetting, whose proportionate strength was even only 60 per cent., the strength of the shell could be made nearly equal to solid plate. Example:—

$$\frac{110-60}{60} = \cdot 83.$$

The circumferential shift of butts would be ·83 of the breadth of the plate, say plates 36 inches wide, the shift would be $36 \times \cdot 83 = 30$ inches.

25. If the longitudinal shift be made 3 strakes apart, that is on the 4th strake, the length of the plate, centre of seam to centre of seam, will be $4 \times 30 = 10$ ft. The strength of shell would be

$$\frac{100\,(n-1)+\text{Percentage}}{n} = \frac{360}{4} = 90 \text{ per cent.}$$

If the material in circumferential laps be 7 per cent extra, that is about 2½ inches at each lap, the total strength of shell will be

$$90 \times 1{\cdot}07 = 96 \text{ per cent. of the solid plate.}$$

or, 107 might be used instead of 100 in the preceding formula, this would drop the 7 per cent on the seam and allow for thinning the corners.

And if the strength of the plate be 48,000 pounds per square inch, for the effect of punching has been already accounted for in the low percentage taken for the rivetting, we get

$48{,}000 \times \cdot 96 = 4{,}608$ lbs. per square inch as the strength of the shell.

The eighth part of this is the working strain,

$$\frac{4{,}608}{8} = 5{,}760,$$

or a little more than the working strain allowed per square inch according to the popular form of Galloway's Rule for 70 per cent. joints and drilled holes. With the butts arranged as above, and the plates of sufficient length, if the strength of the seam were even as low as 45 per cent. the pressure to be allowed would still work out to be as high as that due to 5,500 lbs. per square inch of gross section. It is evident, therefore, that if a pressure be given less than that due to Galloway's supposed rule, manufacturers have only themselves to blame. The additional strength pointed out would be obtained at absolutely no extra cost.

26. The thick plates of marine boilers should always be double rivetted, even although the required pressure may be arithmetically due to an arrangement of single-rivetted seams.

BOOKS RECEIVED.

Our Naval School and Naval Officers: a Glance at the Condition of the French Navy prior to the late Franco-German War. Translated from the French of M. de Crisenoy, by Commander Richard W. Meade, U.S.N. New York: D. Van Nostrand. 1873.

THIS translation has been published in the United States, because the translator thinks that in France there exist "some faults and peculiarities in their system of naval education and government which the American service shares in a measure with them," and because he believes that the remarks of M. de Crisenoy may be beneficially considered by the authorities of the United States Naval Service.

Without going deeply into the question of naval training in either of the two countries, we would observe that, in all cases, the opening up of evils is the first step towards their amendment, and Commander Meade does good service in wisely and temperately intimating to his professional brethren in authority that, in his opinion, there are certain faults in the U.S. Service which should be remedied. We have read the little book with much pleasure, and in its publication we see a good sign of future

naval development in the great country bound to us by so many ties of kinship and friendship. Commander Meade's translation is good, and certainly worth reading by all interested in American naval affairs.

Our Journal in the Pacific. By the Officers of H.M.S. *Zealous*. Arranged and edited by Lieutenant S. Eardley Wilmot, R.N. London: Longmans. 1873.

THERE are some appendices to this work which are really valuable to the mariner navigating the western coasts of the continent of America. They consist of remarks on the winds, currents, harbours, and channels of the different localities, and the information given is evidently the result of painstaking observation. The main portion of the book is devoted to a record of the cruise of the *Zealous*, from 1869 to 1873, the greater part of the time being spent in the Pacific. We find the account well and pleasantly put together, several of the contributors possessing a lively style and some power of description. Journals of this kind are not generally very interesting productions, and we are not in a position to say that this work is transcendently superior to others of a similar nature. Life on board ship is generally rather dull, and its records somewhat tedious. But, given a bad subject, we think the officers of H.M.S. *Zealous* have done a good deal towards making it attractive, and their impressions of the countries and localities visited are by no means uninteresting. On the whole we consider the book is worth reading, only the good parts are mixed up with many details which are unattractive. The engravings are fairly done, but the information in the appendices is the most valuable part of the work.

THE COLOSSUS OF ANGLESEA.—Lord Clarence Paget has, it appears, been amusing himself for the last two years by sculpturing an effigy of Nelson, nineteen feet high, which he has succeeded in completing with only the assistance of a single Welsh workman. A few weeks ago this graven image was set up on a stone plinth on the Anglesea bank of the Menai Straits, and, having been duly unveiled by Lady Clarence Paget, was—to use the words of the *Daily Telegraph*—"touchingly dedicated to all mariners." The same journal observes that it "will serve as a very useful landmark and a guide to indicate the existence of dangerous rocks in this part of the channel." In other quarters the monument has been still more absurdly represented as a great boon to vessels navigating the Irish Channel.

STEAM SHIP BUILDING, 1873.

Place.	No. of Ships, March Qr.	No. of Ships, June Qr.	No. of Ships, added in July & Aug.	Tons Gross, March Qr.	Tons Gross June Qr.	Tons Gross added in July & Aug.
Clyde:						
Glasgow	25	24	12	45,490	47,326	17,685
Greenock	—	6	3	—	14,127	4,803
Port Glasgow	2	9	3	715	11,351	1,864
Sunderland	28	23	6	34,065	26,662	5,709
Tyne:						
Newcastle	16	17	7	21,120	23,393	7,689
North Shields	11	11	6	5,740	4,667	3,367
South Shields	5	4	2	2,978	3,648	461
Liverpool	8	11	1	9,537	11,572	552
Dundee	4	1	2	4,529	1,579	2,628
Hartlepool	3	3	4	3,865	3,360	2,855
Aberdeen	4	2	3	3,536	592	1,876
London	7	2	6	2,735	4,017	1,858
Belfast	1	—	—	2,652	—	—
Stockton	2	3	2	2,584	2,719	1,985
Kirkcaldy	1	1	—	2,019	425	—
Middlesbro'	2	4	2	1,860	5,766	2,123
Hull	3	3	4	1,543	2,472	7,243
Leith	1	—	—	1,400	—	—
Bo'ness	1	1	—	1,080	1,116	—
Whitehaven	—	1	—	—	1,002	—
Other Ports	4	9	5	524	1,654	1,320
Total	128	135	68	147,972	167,448	64,018

FRENCH MERCANTILE MARINE.—The shipowners and merchants of Marseilles have petitioned the Minister of Commerce to proceed at once with that inquiry into the causes of the present unsatisfactory state of the Mercantile Marine, which was recently sanctioned by the National Assembly. They complain that the present high rates of carriage on the Paris, Lyons, and Mediterranean Railway exercise a prejudicial influence on the trade of the port, which has also suffered, it is alleged, more than might be supposed from the transference to Brindisi of the Peninsular and Oriental Company's steamers.

MONTHLY ABSTRACT OF NAUTICAL NOTICES.

No.	Place.	Subject.
178	Africa—South-east Coast—Inhambune River	Establishment of a Light.
179	Japan- Inland Sea—Tsuri Sima	Establishment of a Light.
180	Africa—West Coast—Cape Palmas	Extinction of Light.
181	Azores—San Miguel—Punta Delgada	Progress in construction of Breakwater
182	China—Hong Kong—Tathong Channel	Discovery of a Sunken Rock in.
183	South America—Cape Frio	Discovery of a Bank off.
184	California—San Francisco—Mase Island	Establishment of a Light.
185	England — East Coast — Yarmouth — Hewett Channel	Decrease in Depth of Water.
186	England — Thames Entrance — Kentish Knock Lightvessel	Correct Position on Chart.
187	England—Thames Entrace—Oaze Sand	Proposed Establishment of a New Buoy
188	England—Humber River	Alteration in Skitter Sand.
189	China—East Coast—High Lamock Island	Intended Establishment of a Light.
190	Japan—Nipon—South-east Coast—Suga Sima	Establishment of a Light.
191	Australia—West Coast—Point Cloates	Discovery of a Sunken Rock off.
192	Australia—Queensland—Inner Route	Discovery of a Shoal Patch.
193	Australia—North-west Coast	Discovery of a Shoal near Cartier Islet
194	Australia—Queensland—Lady Elliott Island	Alteration in Light.
195	Canada—Ontario—Owen Sound—Presqu Isle	Establishment of a Light.
196	Canada—St. Lawrence River—Hamilton Island	Establishment of a Light.
197	Canada — St. Lawrence River — Glengarry, or Stonehouse point	Establishment of a Light.

NAUTICAL NOTICES.

178.—*Africa.—South-east Coast.—Inhambune River.*—A *fixed* light is now exhibited on the east point of Barrow hill, south side of the entrance of the river; it is 140 feet above the sea, and should be seen 10 miles. Position, lat. 23° 45′ S., long. 35° 34′ E.

179.—179.—*Japan.—Inland Sea.—Tsuri Sima.*—A *fixed white* light of the third order is now exhibited on the north-west point of Tsuri Sima, a small island westward of Kosii Sima. It is elevated 286 feet above the sea, and should be seen 20 miles. It is obscured towards the land from N. by E. to W. by S. $\frac{1}{3}$ S. Position, lat. 33° 53′ N., long. 132° 38$\frac{1}{4}$′ E.

180.—*Africa.—West Coast.—Cape Palmas.*—The light on Cape Palmas has not been exhibited for some time, and the apparatus is out of order. No date is assigned for its re-exhibition. Mariners are therefore cautioned accordingly.

181.—*Azores.—San Miguel.*—The breakwater now in the course of construction at Punta Delgada is already sufficiently advanced to afford shelter to the local traffic of the island.

182.—*China.—Hong Kong.—Tathong Channel.*—Information has been received of the existence of a sunken rock on the south-west side of the entrance of this channel, and on which the Peninsular and Oriental Company's steamship *Bokhara* lately struck. This danger (*Bokhara rock*) is a pinnacle rock with 3 fathoms on it at low water springs, it has 7 fathoms close to on all sides, and 10 fathoms around. From it the extreme of Cape d'Aguilar bears S.W. $\frac{5}{8}$ W. 7 cables, and Tathong rock N. by W. $\frac{1}{3}$ W. nearly 13 cables.

Note.—Ships from Hong Kong bound to the southward, and passing through Tathong channel, are recommended to keep in mid-channel if intending to proceed through the Shing-shi-moon pass, Tathong rock should not be brought to bear to the northward of N.N.W. (or with Cape Collinson seen well open to the eastward of it) until Tytam head comes open of the southernmost islet off Cape d'Aguilar.

183.—*South America.—Brazil.—Cape Frio.*—The commander of the Italian frigate *Garibaldi*, when in the vicinity of Cape Frio, obtained a sounding of 16 fathoms, the ship being then in lat. 23° 4′ S., long 41° 46′ W. (approximate), with Cape Frio lighthouse bearing W.N.W. westerly, and then on a S.S.W. course, found 15, 14½, 12, 9, 14½, 16, and 76 fathoms successively, the ship at the last sounding being in lat. 23° 10′ 50″ S., long. 41° 50′ 30″ W., with Cape Frio bearing N.W. $\frac{1}{2}$ N. northerly, distant 13 miles.

184.—*California.—San Francisco.—Mase Island.*—A *fixed white* light of the fourth order is now exhibited on the south-east end of this island, entrance to Karquines Strait; it is 72 feet above the sea, and should be seen 14 miles. Position, lat. 38° 4′ 20″ N., long. 122° 14′ 15″ W. The red buoy, at the junction of Mase Island Strait and Karquines Strait, bears E. $\frac{1}{4}$ S., distant half a mile from the lighthouse.

185.—*England.—East Coast.—Yarmouth.*—The depth of water in Hewett channel has decreased; and not more than 25 feet can now be depended upon at low water spring tides.

186.—*England.—Thames Entrance.*—The position heretofore assigned to the Kentish Knock lightvessel on Admiralty Chart, No. 1975 (Kentish Knock to West Swin), has been corrected. The position of the lightvessel is in lat. 51° 40′ 7″ N., long. 1° 40′ 30″ E.

187.—*England.—Thames Entrance.—Oaze Sand.*—In order to mark the north side of the sand, a *can* buoy, painted *black* and *white vertical stripes* will, in October next, be placed on the north side of the sand, about one mile to the westward of the East Oaze buoy.

188.—England.—*Humber River.*—*Skitter Sand.*—This sand between the buoys Nos. 8 and 9 has extended to the north-eastward, narrowing the main channel between Paull and Hull; No. 8 buoy now being in 2 fathoms at low water springs, and the sand near it (on which there has usually been 18 to 20 feet) now dries.

Note.—In navigating the Humber between Paull and Hull, the low lights at Salt End and at Paull Clough should not be opened to the northward of the High lights, and care should be taken to use the lead when approaching either the Skitter sand or the West Middle shoals.

189.—China.—*East Coast.*—*High Lamock Island.*—The works for the construction of a lighthouse on High Lamock island have been commenced, and it is expected that the light will be exhibited before the end of 1873. The light will be a *fixed* white light of the first order, elevated about 240 feet above the sea, and will be seen 22 miles. The tower will be round, built of iron, 25 feet high, and painted black. Position, approximate, lat. 23° 14′ 50″ N., long. 117° 17′ 30″ E. It is proposed to exhibit a *red* light on the southern slope of the island, visible only between N.E. by N. and N.E. ½ E., as a guide for clearing the White and Boat rocks.

190.—*Japan.*—*Nipon, S.E. Coast.*—*Suga Sima.*—A light is now exhibited from a lighthouse on Suga Sima, at the entrance to Toba harbour, west side of the entrance of Owari bay; it is a *fixed* white light of the fourth order, elevated 176 feet above the sea, and should be seen 15 miles. The tower is on the north-eastern point of the island, built of brick, is 28 feet high, and painted white. Position, approximate, lat. 34° 30′ 40″ N., long. 136° 54′ E.

191.—*Australia.*—*West Coast.*—Information has been received of the existence of a sunken rock on which the ketch *Strathmore* touched. This rock (*Strathmore rock*) has about 8 feet water on it, and is situated about 12 miles W. from Point Cloates, and therefore approximately in lat. 22° 37′ S., long. 113° 24′.

192.—Australia.—*Queensland.*—*Inner Route.*—Mr. Scott, master of the schooner *Three Brothers*, reports the existence of a shoal patch near Endeavour river, and two-thirds of a mile from the usual track of vessels. The rock (*Scott rock*), on which the sea was breaking, is in lat. 15° 35′ S., with Mount Cook bearing N.W. by W. ½ W., and Rocky islet S.W. by W.; these bearings place the danger in long. 145° 25′ E. Shoal water appeared to extend to the westward of the rock.

193.—Australia.—*North-west Coast.*—The master of the barque *Woodbine*, when about 7 or 8 miles north-westward of the sand islet, discovered by the ship *Cartier*, found shoal water and got one cast of 10 fathoms. The shoal appeared to extend to the north and north-west-

ward as far as could be seen from the masthead, with apparently shoal water in many places. Position, lat. 12° 22′ S., long. 123° 55′ E.

194.—AUSTRALIA.—*Queensland.—Curtis Channel.—Lady Elliot Island.* —The following alteration has been made in the light on Lady Elliot island :—The fixed light is changed to a *flashing* light of the fourth order, showing a flash *every half minute.*

195.—CANADA.—*Ontario.—Owen Sound.—Presqu Isle.*—A *fixed white* light is now exhibited at Mackenzie's wharf, elevated 35 feet above the sea, and should be seen 12 miles. Position, lat. 44° 41½′ N., long. 80° 53¾′ W.

196.—CANADA.—*St. Lawrence River.—Hamilton Island.*—A *fixed white* light is now exhibited 42 feet above high water on the south side of the island; it should be seen 10 miles. Position, lat. 45° 4′ 30″ N., long. 74° 32′ 30″ W.

197.—CANADA.—*St. Lawrence River.—Glengarry, or Stonehouse Point.* —A *fixed white* light is now exhibited 42 feet above high water on this point; it should be seen 10 miles. Position, lat. 45° 3′ 30″ N., long. 74° 36′ 45″ W.

VESSELS WHOSE NAMES HAVE BEEN CHANGED.—*Adjutant*, of Newcastle, to *City of Brussels*, of London; *Sea King*, of Liverpool, to *Surprise*, of Liverpool; *Asiatic*, of London, to *Ambriz*, of London.

COLLISIONS AT SEA.—In consequence of the recent numerous collisions between vessels of the Royal Navy and those of the Mercantile Marine, which have led to the repair of the latter in Government dockyards, the Admiralty have issued an order that in all future cases of the kind the officer commanding the Queen's ship is to make a full report of all the circumstances attending the collision, with the view of preventing fictitious or exorbitant claims for damage being entertained. Detailed statements respecting the occurrence by such of the officers and crew as the captain may think fit are also to be forwarded, and the following are the points upon which information is specially requested :—The time and place of collision; the direction of the wind; the state of the weather; the state and force of the tide; the course and speed of Her Majesty's ship; the distance and bearing of the other vessel when first seen; the lights, if any, of the merchant vessel which were first seen; whether any lights of the merchant vessel other than those first seen came into view before the collision; what measures were taken on board Her Majesty's ship to avoid the collision, and when they were taken; and the parts of each vessel which came into contact.

OUR OFFICIAL LOG.

CHAIN CABLES ACT.—The Board of Trade have, by notice in the *London Gazette*, published the substance of an order to be submitted to Her Majesty in Council. The objects of the order are explained as follows:—"And whereas the Lord Commissioners of the Admiralty have, since the passing of the said Chain Cable and Anchor Act of 1864, issued an extended scale showing the tensile strains to which chain cables are subjected before being received for the use of Her Majesty's naval service. And whereas the second schedule to the Chain Cable and Anchor Act, 1871, contains certain typographical errors which it is desirable to rectify. And whereas the Board of Trade have been applied to, to define the breaking and tensile strains to be applied to chain cables made of iron of sizes intermediate between the sizes named in the said second schedule. And whereas the said second schedule to the said Act of 1871 does not contain any notification of the tensile and breaking strains to be applied to chain cables known as short link chains. And whereas the Board of Trade have been applied to to make provision for publishing the breaking and tensile strains for chain cables consisting of short link chains. And whereas the Board of Trade are fully advised and satisfied that such provision ought to be made. Now, therefore, in exercise of the said recited Chain Cable and Anchor Act of 1871, it is hereby ordered and directed that the schedule set forth at the foot hereof shall be substituted for the second schedule appended to the said last-mentioned Act." The strains for stud link chain cables are given in such a way as to avoid jumps in the proofs for larger sizes, and close link chain cables are to be tested to less than stud link. As an example, we may take the inch cables. The proofs are for stud link tensile eighteen tons breaking twenty-seven tons; close link tensile twelve tons breaking twenty-four tons. So that, although in the case of close link chain the breaking strain is cent. per cent. above the tensile strain, it is still, for the size we have given, three tons below the breaking strain for stud cables of the same size.

FEES FOR SURVEY OF EMIGRANT SHIPS UNDER THE PASSENGERS ACTS.

Description of Survey.	Amount of Fee.
Ordinary survey of the ship, and of her equipments, accommodation stores, light, ventilation, sanitary arrangements, distilling apparatus, and medical stores	£3 0 0
Special survey	4 0 0
Ditto entailing unusual attention, from ...	5 0 0

It will be noticed that the fee for the ordinary survey now includes a

survey of the distilling apparatus. Two visits to the apparatus are included in this fee, provided the inspection is made before the vessel leaves the vicinity of the docks. Where, however, for their convenience the owners have the distillery apparatus examined at a distance, say, below Blackwall, in the port of London, or at the tail of the bank for the River Clyde, extra expenses will be incurred. This is, however, a matter entirely within the control of owners. A special survey is, as heretofore, to be deemed to be a survey requiring more than two visits by the surveyors or emigration officers, or a survey in cases in which, from age or any other circumstances, the emigration officer has any reasonable grounds for doubting the seaworthiness of the vessel. The fee for a special survey will usually be £4, but where the case requires unusual attention, and occupies an unusual amount of the surveyor's time, it will be £5, or upwards, according to the special circumstances of the case, and the number of visits. Where a declaration for twelve months has been granted for a steamship, under the Merchant Shipping Acts, the *first subsequent* survey under the Passengers Acts will be made on the fee of £1 being paid for distilling apparatus (subject to the foregoing conditions as to survey of distilling apparatus) and without other fee for survey. If, however, a passenger (emigrant) ship sails from one port, say, London, and proceeds to another port, say, Plymouth, and there takes in passengers and cargo, the fee for the extra survey, &c., in the other port, say, Plymouth, will, as heretofore, be charged, in addition to the fees paid in London. Travelling expenses, if any, and subsistence expenses, if any, due according to the scale authorised by the department, will be charged, in addition to the fees.

Board of Trade Inquiries at Home.

120. *Isabella Sarah*, of Newcastle, abandoned 5th January, in lat. 55° 26′ N., long. 3° 3′ E. Inquiry ordered 5th June, and held at South Shields, 5th September, before H. Nelson, Esq., J.P., and J. Broughton, Esq., J.P., with Admiral Powell and Captain Nicolas as nautical assessors. Court justified the abandonment, under the circumstances, but considered the vessel "was most unfit" for the voyage from Niewe Dieppe to Shields. Captain Nicolas was of opinion that she should never have left Shields outward bound as she was unseaworthy.

129. *Volunteer*, of Shoreham, abandoned in the North Sea, 13th November, 1872. Inquiry ordered 19th June, and held at New Shoreham, 15th and 16th August, before W. S. Stonehewer, Esq., J.P., and H. Bridger, Esq., J.P., with Captains Grant and Nicolas as nautical assessors. The abandonment was considered by the Court to have been

justifiable, and it thought the vessel would have withstood a gale of less severity.

133. *Biafra*, of Teignmouth, stranded about two cables' length from Ramsgate Pier, 7th June. Inquiry ordered 24th June. Proceedings pending.

136. *Yarborough* and *Odessa*, came into collision, 6th June, off Spurn. Inquiry ordered 25th June, and held at Greenwich, 12th July, before D. Maude, Esq., stipendiary magistrate, with Rear-Admiral Powell and Captain Oates as nautical assessors. Court returned the certificates of the master and mate of the *Odessa*, but thought communication with the engine-room was inefficient.

138. *Patrician*, of Newcastle, abandoned; date and place unknown. Found 20th November, 1872. Inquiry ordered 1st July, but subsequently abandoned.

143. *Bridemaid*, of Jersey, stranded, 2nd June, off Barfleur Lighthouse. Inquiry ordered 1st July. Proceedings pending.

145. *Brancepeth*, of Liverpool, stranded on South Banks of Texel, 16th May. Inquired ordered 2nd July, but subsequently abandoned.

147. *Chillingham Castle*, passed the Downs 20th November, 1872, and has not been heard of since. Inquiry ordered 4th July, and since abandoned.

151. *Glen Allyn*, of Hull, stranded 22nd June, at Bally Croneen, 22nd June. Inquiry ordered 19th July, and held at Liverpool, 26th August, before H. Mansfield, Esq., deputy stipendiary magistrate, with Captains Wilson and Oates as nautical assessors. Casualty due to error of pilot. Lead was not hove owing to pilot's extreme confidence as to his position. Master's certificate was returned as he appeared to have done his duty.

155. *Manchester*, of Workington, stranded on Jordan Flats, 24th June. Inquiry ordered 19th July. Proceedings pending.

156. *Valetta*, of Newcastle, leaky in lat. 24° 32′ S., long. 54° 10′ E., 7th March. Inquiry ordered 19th July. Proceedings pending.

157. *Henry Woolley*, of Borrowstoness, foundered 150 miles E. of the Isle of May, on 27th June. Inquiry ordered 22nd July. Proceedings pending.

158. *Lord John Russell*, of Portsmouth, leaky on its voyage, 3rd July. Inquiry ordered 22nd July, but subsequently abandoned.

160. *Durham Castle*, of London, stranded in Holyhead Harbour. The vessel was afterwards lost at sea. Inquiry ordered 24th July, but subsequently abandoned.

161. *Vesper*, of Cork, three men drowned, in attempting to leave the ship, by the boat swamping, 5th July. Inquiry ordered 25th July, and held at Belfast, 18th and 19th August, before Edward Orme, Esq.,

stipendiary magistrate, with Commander Knox, R.N., as nautical assessor. Master was not justified in abandoning the ship when he did, but was censured only, as he held no certificate. Owners were to pay £15 towards the cost of the inquiry, because the vessel was undermanned.

162. *Princess of Wales*, Glasgow, stranded three miles S.S.E. of Dundalk Lighthouse, 2nd July. Inquiry ordered 28th July, and held at Liverpool, 12th and 13th August, before H. Mansfield, Esq., stipendiary magistrate, with Commander Forster, R.N., and Captain Wilson as nautical assessors. In the absence of direct evidence of a graver character, the Court looked upon the conduct of the master as showing the grossest negligence and incompetency. There was further default after she struck, and the master's certificate was cancelled.

163. *Glenrallock*, of Liverpool, stranded near the Esplanade Lighthouse, Fleetwood, 8th July. Inquiry ordered 28th July, and held at Liverpool, 14th and 15th August, before H. Mansfield, Esq., stipendiary magistrate, with Commander Forster, R.N., and Captain Wilson as nautical assessors. Court attributed the casualty to an improper and reckless attempt to take the vessel into port at the then state of the tide. Master's certificate was returned as the pilot had absolute control of the vessel at time of stranding.

164. *Berwick*, of London. Explosion about five miles off the Dudgeon, 9th May. Inquiry ordered 29th July. Proceedings pending.

165. *Anna Frances*, of Carnarvon, foundered lat. 7° 30′ N., long. 27° 10′ W., 6th June. Inquiry ordered 4th August, and held at Cardiff, 15th, 16th, and 18th August, before R. O. Jones, Esq., stipendiary magistrate, with Commander Lillingston, R.N., and Captain Steele as nautical assessors. Court acquitted the owner of all blame, and attributed the foundering to the carelessness or incapacity of the master who neglected the simplest remedies. Court suspended his certificate for two years from 15th August.

166. *Aberdeenshire*, of Hull, stranded on Inner Binks Spurn, 16th March. Inquiry ordered 4th August. Proceedings pending.

167. *Bulgarian* and *Nestor*, came into collision in lat. 48° 50′ N., long. 6° 50′ W., 18th February. Inquiry ordered 11th August, and held at Liverpool, 27th and 28th August, before H. Mansfield, Esq., stipendiary magistrate, with Captains Wilson and Oates as nautical assessors. Master of *Bulgarian* was exonerated, as he used all means to avert the collision. The look-out man might have given earlier warning. There were only two saved from the *Nestor*, and they were below at the time of the disaster, consequently useless as witnesses.

168. *Dunmail*, stranded on the Mersey Bar, 10th August. Inquiry ordered 11th August, and held at Liverpool on 18th, 19th, and 20th

August, before H. Mansfield, Esq., stipendiary magistrate, with Captains Wilson and Oates as nautical assessors. Court attributed the disaster to the rashness and inexplicable errors of the pilot. The master neglected to exercise due supervision of the pilot, and Court suspended his certificate for three months from 20th August.

169. *John*, of Bridgewater, stranded between Slade Dock and Hook Light, 18th July. Inquiry ordered 12th August, and held at Bridgewater, 20th and 21st August, before J. R. Smith, Esq., J.P., and H. F. Nicholls, Esq., J.P., with Commander Forster, R.N., and Captain Nicolas as nautical assessors. Master neglected the log and lead. After the stranding he made insufficient efforts to save the ship and cargo. He held no certificate, but was ordered to pay £10 as part of the costs.

170. *Eleanor Alice*, of Beaumaris, foundered at Porthcain, 21st July. Inquiry ordered 13th August. Proceedings pending.

171. *Nigretia*, of London, stranded on Carpenter's Rock, 14th June. Inquiry ordered 15th August, and held at Liverpool, 31st August, but adjourned *sine die*.

172. *Creole*, of Belfast, stranded half-a-mile S. of the Calf of Man, 27th July. Inquiry ordered 16th August. Proceedings pending.

173. *Almora*, of London, started stanchions and deck-seams, lat. 42° 59′ N., long. 62° 43′ W., 12th July. Inquiry ordered 16th August, but subsequently abandoned.

174. *Venus*, of Stranraer, stranded off the Tees Bar, 20th May. Inquiry ordered 16th August, and held at Newcastle, 2nd, 4th, 8th, and 9th of September, before Richard Cail, Esq., mayor, and H. Milvain, Esq., J.P., with Commander Lillingston, R.N., and Captain Steele as nautical assessors. The vessel might have been beached had the men in charge kept to their posts. They were censured for cowardice in leaving when there was no danger. The owner was ordered to pay £10 to the Board of Trade for delaying the inquiry. The vessel was not unseaworthy.

175. *Mary Jane*, of Halifax (Nova Scotia), stranded on Skerries, 20th July. Inquiry ordered 16th August, and held at Liverpool, 29th August, before H. Mansfield, Esq., deputy stipendiary magistrate, with Captains Wilson and Oates as nautical assessors. There was the strongest presumption that the vessel was negligently or erroneously navigated, but in the absence of evidence the Court decided to return the master's certificate.

176. *Waveney*, of Lowestoft, stranded N.E. end of Longsand, 31st July. Inquiry ordered 16th August. Proceedings pending.

177. *Muriel*, s.s., and *La Escocesa* in collision off Birkenhead Dock, 8th August. Inquiry ordered 16th August, and held at Liverpool, 21st, 22nd, and 23rd August, before H. Mansfield, Esq., stipendiary magis-

trate, with Captains Wilson and Oates as nautical assessors. The masters of both vessels were exonerated, and the collision attributed to want of judgment on the part of the *Muriel's* pilot.

178. *Canadian*, of North Shields, stranded on Craster Rock, 25th July. Inquiry ordered 20th August, and held at Alloa, 8th and 9th of September, before W. B. Clark, Esq., J.P., and R. Moubray, Esq., J.P., with Admiral Powell and Captain Oates as nautical assessors. Vessel was too deeply laden, considering that she was built for river navigation only. Mr. Archbold was found guilty of imprudence, as master and owner, but as the immediate cause of the stranding was the refusal of the vessel to answer its port-helm, his certificate was returned.

179. *James and Mary*, of Bristol, foundered abreast of West Nash Buoy, 30th July. Inquiry ordered 20th August, and held at Bristol, 10th September, before H. J. Mills, Esq., J.P., and W. Pethick, J.P., with Captains White, R.N., and Steele as nautical assessors. Court found that the vessel was not in a safe and efficient state when she left Bristol, on her last voyage, but did not consider the owner guilty of wilful neglect or default. Master was exonerated.

180. *Skerryvore*, s.s., and *Llama*, s.s., came into collision, near Lower Lighthouse, Belfast Lough, 21st July. Inquiry ordered 22nd August. Proceedings pending.

181. *Alabama*, s.s., and *Abeona* came into collision. Inquiry ordered 25th August. Proceedings pending.

182. *Azuline*, of Newcastle, foundered in lat. 40° 34′ N., lon. 49° 38′ W., 31st January. Inquiry ordered 29th August, but subsequently abandoned.

183. *St. Clair of the Isles*, stranded on a sunken rock in Kilchoan Bay, 1st August. Inquiry ordered 30th August, and held at Glasgow, 9th September, before E. Collins, Esq., J.P., and J. Young, Esq., J.P., with Captains Grant, R.N., and Nicolas as nautical assessors. Having found the master guilty of negligent navigation, the Court suspended his certificate for six months. It cautioned the mate, who failed to acquaint himself with the marks for clearing the rocks; and recommended that the Bogham Keil Rock should be properly buoyed.

184. *Belmont*, of Sunderland, stranded eight or nine miles E. of Cape Finisterre, 21st July. Inquiry ordered 30th August. Proceedings pending.

185. *Peace*, of Yarmouth, stranded on some rocks at Ryhope Snook, 16th August. Inquiry ordered 3rd September. Proceedings pending.

Inquiries Abroad.

177. *Isle of Wight*, London, was abandoned 15th June. Inquiry

held at Cape Town, 5th July, before J. Campbell, Esq., resident magistrate, with Mr. G. D. Perry as nautical assessor. Master was exonerated, and the Governor called attention to the weakness and leaky condition of the ship from the date of her departure from Cardiff, outward-bound.

178. *City of Washington*, Liverpool, stranded on the Reefs of Little Port Ebert, 5th July. Inquiry held at Halifax, before Captain Scott, R.N. (commissioner), Captain Mackenzie, and Mr. D. M. Brown, navigating lieutenant, R.N. The casualty was attributed to the deviation of the compasses, and the neglecting to correct the reckoning by the lead. Master's certificate was suspended for one year from date of casualty. The junior officers were exonerated.

179. *James Ives*, of Halifax (N.S.), stranded on Col Log Bank, 2nd June. Inquiry held at Nassau (Bahamas), 10th June, before E. B. A. Taylor, Esq., police magistrate. Casualty attributed to great neglect and want of vigilance on the part of the master, and his two mates. Master held no certificate.

180. *St. Kilda*, steamer, of Wellington, stranded on the bar of Wanganni River, 13th December, 1872. Inquiry held at Wanganni, 24th December, before J. T. Edwards, Esq., J.P., with Mr. R. S. Low, master mariner. The stranding was the fault of the coxswain in charge of the pilot-station, who signalled the vessel to take the Bar when there was not sufficient water for the purpose.

181. *Coleroon*, of London, stranded S.W. of Wangi Wangi Island, 7th June. Inquiry held at Sourabaya, 19th June, before Alex. Hadaway, Esq., acting vice-consul, Arch. Mac Coll, Esq., with Mr. A. Miller and Mr. W. J. Woodbridge, master mariners. The ship was taken out of her course by a strong local current. Due care was exercised by master and crew, who were all exonerated.

182. *Bokhara*, s.s., stranded on a sunken rock in Tathong Channel, 21st June. Inquiry held at Victoria (Hong Kong) before the Hon. Charles May, H. G. Thompsett, Esq., R.N., H. B. Lemann, Esq., Mr. R. H. Cairns (Government Marine Surveyor), and Mr. C. J. Bolton, master mariner. The master was exonerated, as the rock was not marked on the Admiralty chart. He was praised for his energy and skill in preventing the steamer from sinking in deep water. Court recommended that the channel should be surveyed.

183. *Mary Sophia*, of Cardiff, stranded on Ruthe Misslauper Reef, N.E. of Gottland, 3rd August. Inquiry held at Wisby, 21st, 22nd, and 23rd August, before G. R. Perry, Esq. (H.B.M. consul), Oscar Baker, Esq., A. Macnaughton, Esq., and Captain O. Ohrström (Swedish R.N.). Court acquitted the master of willfully stranding the ship, but attributed the casualty to neglect and unseamanlike manœuvring. It suspended his certificate for twelve months from the date of giving judgment.

184. *Precursor*, s.s., of Hull, stranded on a shoal alongside Isle Roude, 30th June. Inquiry held at Montreal, 22nd July, before A. M. Delisle, Esq., W. Workman, Esq., and Hugh McLennan, Esq. (commissioners), who attributed the stranding wholly to the incompetency of the pilot.

185. *Tanjore*, s.s., and *Hurry Pursad*, came into collision near the Vingorla rocks, 17th May. Inquiry held at Bombay, 30th May, before John Connon, Esq. (senior magistrate of police), and Mr. J. Brown, commander of the s.s. *Timoor*. The *Hurry Pursad* showed no light until it was too late, and then ported its helm, which brought it across the steamer's bows. Court acquitted those in charge of the *Tanjore*, and referring to the almost habitual neglect of craft like the *Hurry Pursad*, to show lights, suggested compulsion by legislative enactment.

186. *Leith*, s.s., of Leith, stranded, 9th May, on a rock near Vandeloos Point. Inquiry held at Colombo, 13th, 14th, and 16th June, before T. Berwick, Esq. (District Judge), with Captain Jas. Donnan as nautical assessor. The vessel had been taken out of its course by a sudden change in the current, which was not mentioned in the sailing directions. The second mate's certificate, however, was suspended for eighteen months, for neglecting to call the master, according to orders, when he saw land, and also for assuming the responsibility of navigating the ship without consulting the master. He altered her course by half a point only, when a competent person would have turned her five points at least.

Naval Court Enquiry.

28.—*Dilston Castle*.—On the 19th August, 1873, a Naval Court was held at Alexandria under the presidency of H.B.M. Consul, to enquire into a charge of drunkenness, threatening, and abusive language preferred against a seaman of the *Dilston Castle*. He was found guilty of insubordination, and sentenced to be discharged and undergo one month's imprisonment.

Local Marine Board Enquiries.

13.—*Foyle*.—On the 21st August, 1873, an enquiry was held by the London Local Marine Board into a charge of drunkenness preferred against the master of the *Foyle*. His certificate was cancelled.

14.—*Centaur*.—On the 22nd August, 1873, an enquiry was held by the Liverpool Local Marine Board into a charge of drunkenness preferred against the chief mate of the *Centaur*. Sufficient evidence not being produced to require hearing of defendant's witnesses, certificate was returned to him.

Maritime Law.

Survey of Vessel.—The "Circassian."—On an application made to the stipendiary and borough magistrates, at Swansea, on behalf of the owners of the brig *Circassian*, of Shoreham, it appeared that, when the vessel was about to leave Swansea, with a cargo of coal, the Board of Trade, who had been furnished with certain information, ordered her detention for survey. The agent of the owners complained that the Board of Trade surveyor came on board the vessel, whilst she was unloading for the purpose of survey, and commenced his work without waiting until the unloading was completed, and the owners and their surveyor could arrive from London. He further stated that the Board of Trade surveyor requested him to put on an extra lot of men to scrape the ship outside, but that he had refused to do this, or anything else, until the owner arrived. The Board of Trade surveyor explained that he had received an order to survey the vessel, and wished to be allowed to proceed with his work. He had warned the complainant of the consequences of stopping him, and had told him he must not be impeded in his work, and that he was determined to do his duty until the Board of Trade ordered him to desist. The Bench stated that the section (Sec. 16) of the Merchant Shipping Act, 1854, which referred to the powers vested in the surveyor, was as follows:—"Every person who wilfully impedes any such inspector (and a surveyor is an inspector) appointed by the Board of Trade as aforesaid, in the execution of his duty, whether on board any ship or elsewhere, shall incur a penalty not exceeding £10, and may be *seized and detained by such inspector* or other person, or by any person or persons whom he may call to his assistance, until such offender can be conveniently taken before such justice of the peace or other officer having proper jurisdiction," and observed that the Board of Trade surveyor ought not to be impeded, for it was clear that he had a right to survey the vessel.—(Swansea Police Court, July 28.)

Mutiny on Board a Yacht.—Two of the crew of the schooner yacht *Angela* were charged before the magistrate at Lowestoft, with having, on the 1st August, mutinied in a state of drunkenness, when in Lowestoft Roads, and attempted to fight the owner. The defendants, who were taken into custody by the Coastguard, were committed to gaol for twenty-one days, with hard labour.—(Lowestoft Police Court, Aug. 2.)

Damage to Ship.—"The Cromwell."—The General Iron Screw Collier Company (Limited) v. The Tees Conservancy Commissioners.—In an action for damages for injury done to the ship *Cromwell*, by reason of its settling down upon a pile in the river Tees, it was arranged that the question of damages should be referred, and the question before the Court was whether the damage arose from the negligence of the

defendants. It appeared that the *Cromwell* had shipped her cargo and was ready for sea, but was detained by bad weather, and was placed between two buoys at a place called Cochrane's Wharf. At low water she took the ground, settled on a pile, and filled with water. It was contended that defendants, the Tees Commissioners, against whom a similar action had been brought three years ago, had notice of the state of the river, and it became a disputed point whether they had put down the pile in question, had removed an old buoy from that spot, leaving the pile in the bed of the river, or could have known that the pile was there. After hearing the plaintiffs' case the judge (Honyman, J.) said he should rule that there was no evidence of negligence on the part of the defendants, and give leave to the plaintiffs to move if he was wrong, but the defendants would not agree and called witnesses. The judge having summed up, the jury found a verdict for the plaintiffs.—(Nisi Prius Court, August 1.)

Royal Navy and Royal Naval Reserve.

Abbreviations.—Ad., Admiral; A., Assistant; C., Captain; Cr., Commander; C., Chief; Cl., Clerk; Cn., Chaplain; D., Deputy; E., Engineer; F., Fleets; H., Hospitals; I., Inspector; L., Lieutenant; M., Midshipman; N., Navigating; P., Paymaster; *r.*, Retired; S. L., Sub-Lieutenant; Sn., Surgeon; St., Staff; N. Inst., Naval Instructor; 1st Class A. E., 1st Class Assistant Engineer 2nd Class A. E., 2nd Class Assistant Engineer; N. Ct., Naval Cadet; Ng. Ct., Navigating Cadet; R. N. R., Royal Naval Reserve.

Promotions.—**Ad.**—Rowley Lambert, C.B., 1855, A.D.C.; Charles L. Hockin, 1855, *r.*; Henry A. Storey, 1855, *r.*; Edward P. B. von Donop, 1855, *r.*; Oliver J. Jones, 1855, *r.*; Octavius Cumberland, C.B., 1855, *r.* **C.**—Robert P. Dennistoun, 1865; Charles J. Brownrigg, 1866; Seymour Curtis, 1866; Henry L. St. John, 1866; Hon. Albert D. S. Denison, 1866. **St. C.**—George Lyon Carr, 1864. **Cr.**—Grosvenor Stopford, 1868; William Parsons, 1860; Alfred Jephson, 1861; John S. Eaton, 1861; Roland M. Sperling, 1861; Arthur K. Wilson, 1861; John Fellowes, 1863. **L.**—Arthur W. E. Prothero, 1869; Edwin J. P. Gallwey, 1870; George E. Coke, 1872; Stephen H. Thompson, 1870.

Appointments.—**Ad.**—Vice-Admiral George G. Wellesley, C.B., to be Commander-in-Chief on the North American and West India Station. **C.**—Edwin J. Pollard, 1868, to *Encounter;* Richard Bradshaw, 1868, to *Encounter;* Thomas E. Smith, 1868, to *Charybdis:* Alfred J. Chatfield, 1868, to *Amethyst;* Henry D. Hickley, 1864, to *Audacious.* **St. C.**—Robert B. Batt, to be Master Attendant at Devonport; George L. Carr, 1873, to be Master Attendant at Devonport, for service at Keyham. **Cr.**—John G. Hanmer, 1870, to *President.* **St. Cr.**—William H. Harris, 1867, to *Asia* (additional), for *Enchantress;* Thomas Pounds, 1868, to *Duke of Wellington,* for *Fire Queen.* **L.**—William H. G. Goodlake, 1872, to *Rattlesnake* (for disposal); John S. L. Long, 1872

to *Encounter;* Frederic V. Isaac, 1871, and Anson Schomberg, 1870, to *Duncan;* Henry Hart Dyke, 1872, to *Serapis;* John Hannen Henderson, 1872, to *Philomel;* Edward S. Evans, 1866, to *Encounter;* Lewis F. Wells, 1869, to *Victoria and Albert;* William M. Lang, 1863, to *Revenge,* for *Goshawk;* Angus MacLeod, 1868, to *Barracouta;* Edward A. Bolitho, 1866, to *Himalaya;* Robert W. Evans, 1865, to *Hector;* H. F. H. Hallett, to *Excellent;* John G. Jones, 1865, to *Duke of Wellington;* William H. Roberts, 1872, to *Aurora;* Francis J. Gray, 1866, to *Achilles;* Charles E. Grissell, 1872, and Arthur C. Clarke, 1872, to *Iron Duke;* Frederic G. T. Lillingston, 1871, to *Jumna;* William F. Murray, 1866, to *Achilles.* **N. L.**—George S. Ralph, 1872, to *Philomel;* William E. Scriven, 1869, to *Research.* **R.N.R.**—To be Lieutenant: Henry Borlase. To be Midshipmen: William G. H. Riach, and Charles W. Hullah. **S. L.**—Augus W. S. Douglas, Cecil F. Foley, Harry F. J. Wyatt, and Charles E. Morison, to *Encounter;* Joseph Mc L. Callwell, and Philip A. Parson, to *Resistance;* Francis G. Jones, to *Philomel;* Charles E. Hawker, to *Clio;* Henry H. Hayes, and M. S. N. Bryan (acting), to *Encounter.* **M.**—William Ricketts, Frank J. Thring, Charles L. Ottley, and Francis G. De Lisle, to *Resistance;* William J. Grogan, to *Agincourt;* Frederic C. D. Sturdee, to *Hercules;* Francis A. Valentine, and Herbert E. P. Cust, to *Northumberland;* Frederic St. L. Luscombe, and Frederic Leeson, to *Sultan;* Henry M. Braithwaite, Henry Saville, Lewis A. Knight, Robert J. Yardley, and W. H. F. Taylor, to *Duncan;* Harry M. Murphy, Morris E. L. Thompson, Edward D. Hunt, Henry R. Robinson, Richard H. L. Risk, Henry C. Burrows, Cyril H. Sandham, to North American and West India stations (for disposal); Henry C. Kingsford, Thomas F. W. Ingram, Lionel G. Tufnel, Prendergast S. Garde, John F. S. Sarjeaunt, and Henry Leeke, to Pacific station (for disposal); Harry M. Braithwaite, to *Resistance;* Charles S. Smith, to *Doris;* Sidney G. Cooper, to *Immortalité;* Sydney G. Randolph, and Arthur B. Willson, to *Lord Warden;* Sackville H. Carden, John A. Tuke, Charles E. Dacres, and Edward B. T. Hall, to *Narcissus.* **N.M.**—Lewis Bayley, to *Encounter;* Charles G. S. Eeles, to *Amethyst.* **N.C.**—Edward P. Charrington, Arthur D. Harford, and Samuel A. W. Handy, to *Resistance;* Robert H. J. Stewart, and Charles A. Buckland, to *Hercules;* Reginald K. Kays, to *Agincourt;* Alfred Edersheim, and John G. Hewitt, to *Northumberland;* Hugh D. Gunner, to *Sultan;* William de Salis, Hon. Gerald F. Digby, and John L. Lory, to North America and West Indies Station (for disposal); Cecil Burney, to Pacific Station (for disposal); Edric J. M. Hopkins, Robert G. Fraser, Evelyn R. Le Marchant, and William B. May, to *Lord Warden;* Charles H. C. Moore, and Arthur F. Poulton, to *Narcissus.* **E.**—Alfred Long, 1865, to *Favourite,* for *Amelia;* William Nicholson, 1865, to *Rattlesnake*

(additional); William Bryan, 1867, and George T. Craddock, 1873, to *Growler*. **1st Class A. E.**—Edward J. Whatmore, 1868, to *Pembroke*, for *Rupert*. **2nd Class A. E.**—Andrew J. Walker (acting), 1873, Richard A. Shapcott (acting), 1873, and Thomas Rule (acting), to *Indus* (for disposal). **Cn.**—Rev. Edward L. Penny, M.A., 1867, to *Cambridge;* Rev. Charles H. Harboard, B.D., 1866, to *Duke of Wellington;* Rev. C. J. Corfe, B.A., 1867, to *Malabar* (for temporary service); Rev. Edmund J. Hitchings, B.A., 1859, to *Encounter;* Rev. James B. Smyth, B.A., 1864, to *Achilles;* Rev. Reginald E. Treffry, M.A., 1873, to *Encounter*. **St. Sn.**—Ahmuty Irwin, 1870, to *Rattlesnake*, for *Simoon;* John Elliott, 1866, to *Duncan*. **2nd Class St. Sn.**—Henry Harkan, 1861, to *Asia;* Henry B. Harrison, 1873, to *Duncan;* George B. Beale, M.D., 1870, to *Fisgard* (additional, for temporary service); William H. Cruice, 1863, to *Aboukir;* Thomas L. Bickford, 1873, to *Charybdis;* James A. Allan, M.D., 1861, to *Crocodile*. **Sn.**—Hayman Thornhill, M.B., 1872, to *Philomel;* Robert Turner, 1868, to *Indus;* John K. Conway, M.D., 1868, to Cape of Good Hope Hospital; Alfred G. Delmege, M.D., 1869, to Royal Marine Artillery; Thomas L. Horner, 1868, to *Impregnable;* James Donovan, 1871, to *Ganges*, for *Liberty;* James G. Wall, 1872, and John W. Scott, 1872, to *Repulse* (for disposal); William F. Spencer, M.D., 1872, and William H. Boland, 1872, to *Royal Alfred* (for disposal); Francis Loftie, 1872, to *Duncan* (additional); Alfred W. Whitelay, 1863, to *Royal Adelaide;* Otway P. Browne, M.D., 1872, and Robert W. Williams, 1872, to *Glasgow* (additional); George Gibson, A.B., M.B., 1872, to *Charybdis;* George H. Madeley, 1867, to *Pembroke* (for temporary service); Robert Sproule, 1873, to *Encounter;* James A. Allen, to *Crocodile*. **P.**—Henry Gilpin, 1856, to *Aboukir* (for victualling stores at Jamaica); Edward S. M. Power, 1867, to *Royal Adelaide*, for *Tamar;* James E. Stanton, 1867, to *Serapis*. **A. P.**—Abraham Turner, 1867, to *Philomel* (in charge); John J. A. Sloan, 1869, to *Impregnable;* Robert A. Moore, 1870, to *Rattlesnake* (additional); Malcolm C. Murdoch, 1873, to *Encounter*. **Cl.**—Herbert L. Warren, to *Revenge;* Derby R. Kelsey, to *Rattlesnake* (additional). **A. Cl.**—William H. Partridge, to *Rattlesnake* (for disposal).

RETIREMENTS.—**Ad.**—George Ramsay, C.B., 1862. **Cr.**—Richard G. Foster, 1864; Duncan Stewart, 1868; Arthur Wing, 1864. **N. L.**—Selwyn S. Siegden, 1864. **P.**—William E. L. Veale, 1855; James C. Pinhorn, 1852. **A. P.**—Edmund H. Key, 1865; Charles E. Warren, 1866; Richard L. S. Ross-Lewin, 1869.

DEATHS.—**Ad.**—William L. Sheringham, 1871, *r.;* Thomas P. Thompson, 1871, *r.;* Right Hon. Charles P. Earl of Hardwicke, 1863. **Cr.**—Alexander Galloway, 1854, *r.* **St. Cr.**—Manser Bradshaw,

1863, *r.* **S. L.**—Charles P. Jennings, 1872. **M.**—James A. P. Robeson. **N. C.**—Edmund B. Falls.

BOARD OF TRADE CIRCULARS.

HELM INDICATORS.—A question has been raised respecting the marking of helm indicators. It has been alleged that these indicators sometimes indicate the direction of the helm (or tiller) and sometimes the reverse—viz., the direction of the rudder. There can be no question that all indicators should indicate the same thing—viz., the direction of the *helm*, that is to say, the tiller; and this, the Board of Trade have been advised, is now the general practice. In passing a helm indicator the Surveyor should ascertain by actual trial that whenever the pointer moves to the word "port" on the dial or plate, wherever that word may be, it shows that the *helm* is ported, and whenever the pointer moves to the word "starboard," wherever that word may be, it means that the *helm* is starboarded. In the foregoing directions it is assumed that "port helm" means so to move the tiller or yoke as to turn the rudder towards the starboard side of the ship, and "starboard helm" means so to turn the tiller or yoke as to turn the rudder towards the port side of the ship.—*Circular No.* 626, *May*, 1873.

MEASUREMENTS FOR CREW SPACE.—As there appears to be some misunderstanding with reference to the question as to whether Galleys should be deducted from measurement for crew space, the Board of Trade wish it to be understood that they are not to be deducted from measurements for crew space. Galleys situated above the upper deck are not included in the tonnage of the vessel. (*Vide* Par. 3 (c.) of Instructions to Measuring Surveyors.)—*Circular No.* 642, *July*, 1873.

LIFEBUOYS AND LIFEBELTS.—After the 1st of January next, no Lifejacket or Lifebelt will be certified by the Surveyors or Emigration Officers as sufficient for the purposes intended and in good condition, unless it is capable of floating on the water for 24 hours with 28½ lbs. of solid iron attached to it; and no cork lifebuoy will be so certified unless it is capable of floating for 24 hours on the water with 32 lbs. of solid iron attached to it.—*Circular No.* 646, *July*, 1873.

SURVEYS.—In addition to the Instructions contained in Circular 590 as to annual surveys, the Surveyors should, in granting Declarations for any period exceeding six months, be careful when examining the machinery, (1), to have the upper brasses of all bearings taken off; (2), the shaft turned round and carefully examined; (3), the cylinder covers and junk rings lifted for examination of the pistons and cylinders; (4), the slide covers or bonnets removed for examination of the slides, and, if necessary, the slides taken out; (5), the air and circulating pump covers lifted

for examination of the pump buckets and valves; (6), the covers of all feed and bilge-pump valves removed for the examination of the valves; (7), all discharge valves and sea cocks taken out for examination; (8), the propeller shaft to be drawn, if necessary, and it and the screw to be examined; and, in all cases in which the shaft is drawn, it is to be seen again after the screw is secured in its place; (9), the bridges and fire-bars to be removed, to permit of a thorough examination of the boilers and furnaces; (10), all cocks and valves on the boilers to be taken out and examined. After the examination of the parts has been made as above, the machinery must be tried under steam at full pressure. The above instructions are applicable not only to the machinery used for propelling the vessel, but to the donkey engines and boilers connected with the main boilers, and are to be understood as in no way setting aside any previous instructions, or interfering with the examination of stays, safety-valves, &c., as conducted now. It will rest with owners to determine whether they will have a Certificate for any period exceeding six months, but if they do so determine, then the above instructions are to be complied with before a Declaration is granted. The above instructions are also to apply at least once a year to the survey of all passenger steamers, with the exception named in the next paragraph, whatever may be the period for which the Declarations are given. In cases in which steamers are surveyed under the Passengers Act at the commencement of every voyage, and in which they are absent for periods of less than six months at a time, the above instructions do not apply to every survey. The ordinary examination each voyage is sufficient. One complete survey, at least, as indicated above, should, however, be made each year. This Circular is issued more especially for the information of the Surveyors who have been appointed during the present year, and to insure uniformity of practice. In substance, it requires no alteration of practice, as the old Surveyors have always understood the necessity for a careful yearly examination. It must now be acted upon uniformly at all ports, and by all Surveyors from the 1st November next.—*Circular No.* 648, *August*, 1873.

Masthead Light.—Appended hereto is the opinion of the Attorney-General, Solicitor-General, and the Queen's Advocate, as to placing the Masthead Light of Steam Ships. In consequence of that opinion the Board of Trade are constrained to issue the following Instructions:—The Surveyors are to be careful not to pass any steamer unless the lanthorn for the white light is "*at the foremast head*," and, secondly, to see that the sails are so arranged that they will not, under any circumstances, obscure the light when placed at the foremast head. Surveyors are not to advise owners how to arrange or modify sails, but are to decline declaration if the light is not in its proper place, and if the sails obscure the

light. The Surveyors are, if they think it necessary, to see the sails set. They are to go aloft to the masthead in all cases before they give their declarations. Where a Surveyor is too stout, or is from other causes unfit or unable to go aloft himself, he should not give a declaration without one of his colleagues goes aloft for him and in his presence. Here follows opinion:—1. We are of opinion that no white light carried elsewhere than at the foremast head, is carried in accordance with Article 3 of the Regulations. 2. That it is the duty of the Surveyors to refuse to grant the declarations under s. 309, ss. 2, of the Merchant Shipping Act, 1854, unless the light will in all conditions of the ship and her sails be clearly seen in the direction and for the distance required.—(Signed) J. D. Coleridge, G. Jessel, J. Parker Deane.—*Circular No.* 651, *August*, 1873.

Fees and Expenses for the Admeasurement of Tonnage.—The Board of Trade have determined that fees in accordance with the scale given in Section 30 (Schedule 3) of the Merchant Shipping Act, 1873, printed at foot hereof, for measurement of tonnage, are to be paid to the Superintendent of a Mercantile Marine Office, and no ship is to be visited for admeasurement until the fees have been paid, and the Surveyor receives intimation thereof through the Superintendent. This applies to foreign ships as well as to British ships, and whether measured under Rule 1 or Rule 2. Where, however, the gross tonnage of a foreign ship has been ascertained by the British system, and is stated on the Certificate of Registry, the fees are only to be charged for the tonnage of the space actually measured. The countries to whose ships this paragraph applies are, Austro-Hungary, Denmark, France, Germany, United States, Italy. Printed forms of Application for measurement of tonnage, &c. (Surveys 6), similar to those in use for Surveys of Passenger Steamers and for Surveys under the Passengers Acts will be ready in a few days, and should be demanded in the usual way. In addition to the fee, the travelling expenses and personal allowance incurred by the surveyors are to be charged to the Owners. For this purpose the Crew Space Forms, Stm. 26 and 33, may be altered and used pending the issue of a special form for tonnage reports. The charging of local fees in lieu of the actual expenses incurred, in practice at some ports, should be at once discontinued. Fees for measurement of tonnage:—

"For a ship under 50 tons gross register tonnage									£1	0	0
,,	from	50	to	100	tons				1	10	0
,,	,,	100	to	200	,,	,,			2	0	0
,,	,,	200	to	500	,,	,,			3	0	0
,,	,,	500	to	800	,,	,,			4	0	0
,,	,,	800	to	1,200	,,	,,			5	0	0
,,	,,	1,200	to	2,000	,,	,,			6	0	0
,,	,,	2,000	to	3,000	,,	,,			7	0	0
,,	,,	3,000	to	4,000	,,	,,			8	0	0
,,	,,	4,000	to	5,000	,,	,,			9	0	0
,,	,,	5,000	and upwards			,,			10	0	0

—*Circular No.* 652, *August*, 1873.

SHIPPING AND MERCANTILE GAZETTE CORRESPONDENCE.

(Reprinted by special arrangement with Sir WILLIAM MITCHELL.)

ADVANCE ON FREIGHT.—Having chartered a small vessel of five keels for a port in the north to load coals for me, she loaded, and the master drew £12 on my account for ship's use. On her passage home she was lost, the cargo only being partly insured. Are the owners liable, or am I, as charterer?—Money advanced on account of freight is not recoverable. The charterer loses the cash so advanced.

BROKER'S COMMISSION.—My vessel was chartered in London in December, 1872, from Bahia, Pernambuco, or Maceio, for sugar in bags or cases. On arrival at Bahia, merchants wanted charter cancelled, which we did agreeably, and I received a sum of £200 for same. My broker wants to charge me commission on the charter as if performed in full. Can he do so? or shall the commission be due on amount received for cancelling charter? Charter says—"commission due on signing this agreement?"—The broker is entitled to his full commission under the circumstances stated.

CERTIFICATE FOR STEAM LAUNCH.—Must a steam launch carry a master and engineer holding certificates, on going to sea with passengers? Could the owner carry her about the coast, say for 10 miles or so, he holding no certificate?—If the steam launch is employed in carrying passengers, and goes to sea from any port in the United Kingdom, she must have a certificated master and engineer. No steam vessel can legally carry passengers without being licensed, either at sea or in rivers. The owner of a steam launch or small yacht, however, may take such vessel round the coast himself without being required to possess a certificate of service or competency.

CINDER BALLASTING.—Is a ship bringing a ballasting of cinders, say from London to Newport, liable to a payment of light dues thereon or otherwise? No payment whatever is made for the conveyance of said cinders, but consignee put them in and takes them out free of expense to ship?—The rule of the Trinity House is not to charge the light dues to vessels in ballast in the coasting trade; and, for the purposes of the Act, a vessel proceeding from London to Newport in ballast for the purposes of taking in a cargo would be exempt.

COAL CHARTER.—We chartered a vessel on passage to load coal at Glasgow. When the turn came the captain refused to load, giving as his reason for doing so that "the description of coal was not mentioned in charter." For same coal and from same shippers, our charters on similar terms have never been objected to. It is not customary in coal charters from Scotch ports to mention description or quality, so far as we are aware. Captain loaded another cargo. Freights have advanced

since. We want the coal, and must pay the advanced freight. Can we claim from owners the difference in freights between what we chartered at and what we must now pay; also expenses and loss of time through inconvenience for want of coal?—If no particular description of coal was stipulated for in the memorandum of agreement, the charterer would have a right to load the vessel with any sort, provided the ship got her turn and was laden with customary despatch.

COMPULSORY PILOTAGE.—My ship was lying at quay, moored under direction of harbour master, and another ship was towing up, she being in charge of a pilot, and pilotage being compulsory. She ran into me and did some damage. Can I sue the ship for it? or does the fact of her having a pilot exonerate her?—If the crew obeyed the orders of the pilot and did not contribute to the casualty, the shipowner would not be liable.

CUMPULSORY PILOTAGE.—My vessel arrives at Chatham from the Baltic with a cargo of wood. Am I compelled to pay for a Trinity pilot in those waters, where we never had one? If compulsory, how is it that the same rule does not apply to the Thames for vessels coming off similar voyages?—Chatham, for pilotage purposes, is within the London Trinity House district, and vessels trading to or from the Trinity House district to the Baltic are exempted from compulsory pilotage if unlicensed persons are not engaged.

DETENTION OF SHIP AND PAPERS.—A ship is chartered to load about 400 tons of chalk "with all despatch." She arrived at the chalk wharf on Tuesday, and was not loaded until Saturday. What demurrage is due to the ship? There was a dispute about the charges against the ship, and, these being unsettled, the broker detained the ship's papers until Monday. Was not this illegal, and cannot demurrage be recovered for this detention also?—"All despatch" must be determined by the facilities at command for loading, and the custom of the port. The term "all despatch" has no meaning beyond that of ordinary expedition. It is possible to load a vessel with chalk, and to trim the hold properly, so as to constitute efficient stowage, at the rate of 100 tons per working day, or at 200 by night work. There is no claim for demurrage on the broker for detaining the ship's papers. Whoever detains a ship's register, "by reason of any title, lien, charge, or interest, is liable to a penalty not exceeding £100" (Section 50, Act of 1854). If any other documents were detained, such as the manifest, ship's articles, or Customs' clearance paper, the owner of the ship would have to sue the broker for damages thereby incurred.

GENERAL.

THE COASTGUARD.—Notwithstanding some changes which have been recently introduced, the Coastguard service seems to be still in an unsatisfactory condition. Many of the dwelling-houses for the men—especially in remote districts in Ireland—are of the most wretched description; there are still great defects in the arrangements for embarking those detailed for the annual cruise in the ships of the First Reserve; while there is scarcely any available method of obtaining redress for the petty grievances and cases of individual hardship which are continually arising. Added to this, some of the First Reserve ships, in which the men are trained, are in such a defective condition as to be almost practically unseaworthy and useless for the purposes of efficient coast defence. The *Caledonia*, for example, is so bad that she is scarcely allowed to go into the offing for gunnery practice, but lies in the Mersey little better than a hulk. The *Zealous*, which was lately, with difficulty, got home from the Pacific, where she acted as flagship, is another veritable cripple, which, however, is considered good enough to act as guardship in Southampton Water during the time that the *Hector*—herself an interesting specimen of patchwork—is being fitted with new boilers; a point, by the way, in which almost all the First Reserve ships are, more or less, weak. Indeed, neither the *Achilles* nor the *Black Prince* can venture to get up steam to more than a pressure so moderate as practically to render them unfit to proceed to sea. And yet these are the vessels which are supposed to supplement the channel squadron in the defence of our shores! These imperfections in the present system tempt us to regret the abolishment of the Coastguard office; and the Admiralty are said to be themselves so dissatisfied with the existing order of things, as to contemplate the establishment of a system of inspection by an official from Whitehall. There can be no possible doubt that if the ships of the Royal Navy were called on to perform such constant sea-going duties, as are regularly performed by the ships belonging to Messrs. Inman, or Cunard, or the White Star Line, their boilers and machinery would be severely tried.

MARITIME POWER OF RUSSIA.—In spite of the reconstruction of the Black Sea fleet, the Russian papers, especially the *Goloss* and the *Moscow Gazette*, have of late been protesting that there is now no longer any idea of Russia attempting to hold the position of a first-rate naval power in European waters. No squadron she could muster in the Baltic would, it is said, be able to cope with the British fleet, and such ironclads as she possesses in that sea would, in the event of war, have accordingly to retreat under the guns of Cronstadt, to which fortress the capital must

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MARITIME POWER OF RUSSIA.—In spite of the reconstruction of the Black Sea fleet, the Russian papers, especially the *Goloss* and the *Moscow Gazette*, have of late been protesting that there is now no longer any idea of Russia attempting to hold the position of a first-rate naval power in European waters. No squadron she could muster in the Baltic would, it is said, be able to cope with the British fleet, and such ironclads as she possesses in that sea would, in the event of war, have accordingly to retreat under the guns of Cronstadt, to which fortress the capital must

still trust for protection from attack in that quarter. All that the Russian fleet can aspire to do is to guard the coasts and protect the transatlantic commerce of the country and her possessions on the Asiatic shores of the Pacific, for which latter purpose the establishment of a large naval station at Wladimostock is advocated. Such is the tenor of recent Russian utterances; but it is questionable if entire confidence will be reposed in them by the numerous naval officers and others who have visited Cronstadt and the adjacent dockyards during the past summer.

Lighthouse at Cape Guardafui.—The recent loss, near the entrance of the Gulf of Aden, of the *Singapore* and *Kwan Chow*, vessels homeward bound from Shanghai, has awakened shipowners to a sense of the importance of the recommendation lately made by Sir Bartle Frere—namely, that lighthouses should be erected on the African coast near the entrance of the Gulf. The creation of an enormous Red Sea traffic, in consequence of the opening of the Suez Canal, renders it imperatively necessary to diminish, as far as possible, the perils attendant upon the navigation of these narrow waters, more especially as some of the steam-vessels now being almost daily chartered for Oriental ports by this route are doubtless dispatched under the command of captains who have never before passed through the Straits of Bab el Mandeb. The subject was brought before a special meeting of the Glasgow Chamber of Commerce on the 17th ult., when it was resolved to memorialize the Board of Trade "as to the necessity of erecting a lighthouse at or near Cape Guardafui, and one on such other point of the African coast as may be found necessary for the protection of vessels leaving, or making for, the Gulf of Aden."

American Shipbuilding Trade.—There has been recently a great revival in the American shipbuilding trade, although the vessels constructed have been for the most part coasters. The advances in freights and the great demand for ships have tended to make the trade brisker, notwithstanding the increase in the price of materials. Down to the 9th of last month the entries on the American register numbered 388, of which the largest steamer was the *Indiana*, of 3,101 tons, for the Philadelphia and Liverpool line. The largest sailing vessel was a huge schooner of 1,100 tons, for the Lakes, while a canal barge of no less than 1,004 tons was also registered. At present the shipbuilders have still more work than they can overtake, and some of them are greatly in want of hands. The dullness which for long oppressed their business caused men to resort to other occupations, and now there seems to be more work than the present number of men in the trade can perform. The fact that very high class coal can now be delivered on board ship from the works, at one dollar per ton, has, no doubt, largely contributed to this great increase.

THE

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NEW SERIES.

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ROYAL COMMISSION ON SHIPPING.

In our July number we reprinted the text of Her Majesty's Royal Commission to inquire into the alleged unseaworthiness of British registered ships. For details, as to the objects and scope of the inquiry, we refer our readers to our July number.

The Royal Commissioners have now made a preliminary Report, which has been presented to both Houses of Parliament by command of Her Majesty; and we cannot but think the best thanks of the nautical community are due to the noblemen and gentlemen who have so patiently considered the serious and complicated questions involved in the inquiry.

Earnest, but we fear misguided persons, had allowed themselves to be led into the belief that the whole subject was one to be dealt with in an off-hand manner, and with sudden and superficial legislation. The earnest and eloquent gentleman, to whom is owing the interest awakened in the public mind on this subject, must view with great satisfaction the labours of the Commission so far as represented in this Report; and we think that even he must now admit that the subject cannot be dealt with in the rapid manner he had previously proposed, and that when he looks into his remarkable book, and finds on page 56 the following dogmatic assertion, viz., that "Compulsory survey, and prevention of overloading applied to all merchant ships would result in the saving of *all those lives* which are lost from these causes in the list of the Merchant Navy," that he

will at least admit that his hopeful assertion must be considerably qualified. We have no doubt, moreover, that he will now be disposed to see that the inherent difficulties of this really tremendous question, and not a culpable disregard of human life by the British nation, have hitherto prevented wholesale legislation for the seaman's benefit; and that such a passage as the following, on page 87 of his book, viz., "If these brave men (sailors) had been pigs or sheep the Legislature had long since been compelled by powerful advocates to stop such losses; pigs and sheep are property, and property is well represented in Parliament," contains somewhat of an unthinking statement as to the absence of national interest in British sailors' lives. But we desire to say nothing against a well-meaning, although a highly erratic champion of the sailor. It is a duty we owe to him, to thank him for his energetic labours, insomuch as the "Plimsoll Commission," which he called into existence, has already done good work in standing between him and his Quixotic ideas, and commercial interests generally, and in dispelling some of his illusions.

The Report, after pointing out that—"An inquiry which has for its object the amendment of the laws relating to merchant shipping, with a view of diminishing the perils of a seafaring life, ranges over a variety of subjects affecting the interests of the whole trading community. It touches, moreover, many delicate questions of colonial and of international policy," and giving the following statistics: viz., "According to the last annual statement, compiled by the Registrar-General of Shipping and Seamen, the total number of registered vessels belonging to the British Empire is 36,804, with a tonnage of 7,213,829 tons. The number of the crews cannot be accurately ascertained, but it is estimated from the returns obtained to amount to 329,000 men;"—commences with the question of *Overloading*. After pointing out that some witnesses have contended that overloading prevails to a serious extent, the Royal Commissioners state, "An examination of the wreck register tends to *qualify* such statements. The large number of ships in ballast which are annually lost, and the losses from collisions show that the mismanagement and negligence of sailors are not less disastrous than the carelessness of shipowners. On this subject the secretary of Lloyds also observed, 'I do not believe that overloading began suddenly in the year 1872, and yet the loss of ships in the winter of 1872, and the first months of 1873, was far greater than in any former year.' It is, nevertheless, undeniable that overloading renders a ship unseaworthy, and thereby greatly enhances the dangers of a sea voyage. An overladen ship is a ship laden with a heavier cargo than she can safely carry, or so hampered with a bulky cargo on deck, as to impede her proper navigation. When, however, we seek a criterion by which to judge whether or not a ship is overladen, there arises a difficulty; and when we

endeavour to provide some legislative measure to stop overloading, many other difficulties present themselves. Various suggestions to prevent overloading have been submitted to our consideration. A compulsory load-line. The prohibition of deck cargoes. An inspection of merchant ships about to sail."

With reference to *Load-line*, the Royal Commissioners point out that "Some witnesses recommend that the Government should interfere for the protection of life by the adoption of a compulsory load-line for all seagoing ships. This summary form of expression includes several divergent questions. 1st. The expediency of prescribing to what extent ships may be loaded. 2nd. The rule or principle on which this extent of loading shall be determined and indicated. 3rd. The expediency of marking a load-line on ships. 4th. The use to be made of a load-line if marked." And that "We have devoted much time and attention to this part of the subject, and we have taken evidence on the possibility and expediency of adopting such rules;" they state further that "The association known as the London Salvage Association countenances the notion that a certain amount of freeboard in proportion to the depth of hold is essential to the safety of a merchant ship. The surveyors appointed by this association are directed to call the attention of masters, of loading brokers, and of shipowners, to cases in which vessels have been loaded beyond the customary rule of three inches of freeboard to every foot of hold. The staff of this association consists of men who are experts in matters connected with merchant shipping, and a computation found to have been practically convenient might, it is said, be legally enforced. A similar Salvage Association at Liverpool, acting upon the same general principle, uses a scale for the proportion of freeboard to the depth of hold, varying with the size of the ship. Experienced witnesses, on the other hand, contend that such a rule of loading would not only be most unjust, but would inevitably lead to the building of light and weak ships, which would, under this scale, have an advantage over ships constructed with heavier scantlings and strong fastenings;" and came to the conclusion that "*A law prescribing such a rule would therefore enhance the perils of a seafaring life.*" The subject of load-line appears to have occupied a very great deal of their attention, and after all ends with the conclusion that "In accordance with the evidence which we have obtained, we cannot recommend any enactment for establishing a fixed load-line, founded on the proportion of freeboard to the depth of hold of the vessel."

The next point is *Deck Cargoes*, concerning which the Royal Commissioners explain the reasons for repealing the clauses which prohibited the carrying of deck cargoes from ports in British North America, and then pertinently point out that "For the purpose of ascertaining the

effect of legislation on deck loading, it would be necessary to compare the number of voyages and the number of men engaged in the North American timber trade at different periods, as well as the number of lives lost before and after this enactment. The statistics are, however, imperfect and untrustworthy. For instance, the Committee of 1843, pointing to the benefit resulting from the deck law, state that the average loss of life in the years 1840, 1841, 1842 was only 106, and they mention this as a satisfactory result of the law. Later returns show that in the year 1871, when there was no deck law, the loss of life in the same trade was only 16. The number of lives lost in the North American timber trade during the disastrous year 1872 was 105. This number is almost identical with the average number referred to by the Committee in proof of the satisfactory result of the deck law during the years 1840, 1841, 1842." This matter, however, it is proposed to deal with more fully at some future time.

As regards the *Survey of all British Merchant Ships*, the Report states that "Mr. Plimsoll supplied us with some evidence as to a system of inspection which had been adopted in the guano trade. This system he referred to as an example of the benefits resulting from the survey of merchant ships. The firm of Gibbs had during several years an absolute control of the guano trade, and were therefore enabled to impose any conditions which they deemed requisite on the ships which they chartered for guano. Mr. Reid, who was employed as surveyor at Callao, stated that before this survey was instituted unseaworthy ships, or old coffins, as he called them, were employed in the guano trade. This inspection was, he said, so effective, that after its adoption no guano ships foundered at sea. Mr. Stubbs, who was connected with this firm, gave a somewhat different account. He said that the ships at Callao were frequently found to be leaky from having been exposed to the heat of the climate while they sailed in ballast from Australia. He did not know that ships had foundered, except one new ship which foundered near Callao. In this case there was no loss of life. We were able to obtain from the firm of Gibbs a list of the vessels which they had chartered for the guano trade. This list shows the number of vessels lost, abandoned, and foundered both before and after the institution of this survey. From this list it appears that, although the survey may have prevented the taking up of leaky vessels, it did not diminish the number of serious casualties. Mr. Reid was in error when he stated that after the institution of a survey no guano ships foundered at sea." This, again, is to be subject of future consideration.

After giving a statement of the objects and constitution of *Lloyds*, *Lloyds' Registry and Salvage Associations*, the Royal Commissioners, on the whole, do not recommend that any of these admirable voluntary

associations should be converted into authorized establishments for the compulsory survey of all merchant ships.

As regards *Inquiries by the Board of Trade*, it is pointed out that "Mr. Plimsoll stated that there had been few inquiries until the pressure of public opinion had *constrained* the Board of Trade to undertake these duties. In support of this allegation he said that there were only three inquiries in the year 1869. A reference to the returns proves that in that year there were 37 inquiries. We might, if necessary, point out many other inaccuracies in his statements, but he has the merit of having called attention to the loss of life which occurs in the Mercantile Marine from the culpable neglect of shipowners, as well as from other preventible causes. Some allowance may therefore be made for misstatements and exaggerations which we are obliged occasionally to notice. The inquiries by the Board of Trade have in some cases suggested improvements, and contributed to the greater safety of navigation. It is, however, admitted that the procedure in these courts requires amendment. The present system, it is said, renders it impossible to get at the facts of the case. There is little confidence in the decisions of the courts. The same tribunal cannot conveniently be a court of inquiry and also a court of criminal law. Mr. O'Dowd, who has for many years been employed by the Board of Trade in these inquiries, stated that the proceedings in these courts were not in conformity with constitutional procedure. Neither the shipowners nor the relations of the persons drowned are represented in these inquiries. The owner of the lost vessel may therefore suffer from imputations to which he can offer no reply. The court may punish the master by depriving him of his certificate, but it has no power over the shipowner, however culpable his conduct may have been. The evidence proves that there is a great difficulty in constituting courts qualified to decide the technical and complex questions which frequently come before them. In some cases the courts appear to have decided with imperfect knowledge of the facts, but there is no ground for the imputation made by Mr. Plimsoll, that the Board of Trade desired to screen the shipowners. The amendment of the courts of inquiry is an object of great importance, but it is a matter which would require careful consideration, and we have not taken sufficient evidence upon the subject to justify our making any recommendations."

The whole gist of this *ad interim* Report seems to be, "Before attempting interference with the maritime commerce of the country, the more prudent course would be to observe the effect of the large power with which the Board of Trade has been recently invested. That department may now detain any ship, which from the defective condition of her hull or equipments may be believed by the Board of Trade to be unfit to proceed to sea. Such a measure under careful administration

will afford a remedy for immediate dangers. The improvement of iron shipbuilding must be a slower process; but the vigilance of a public department instituting inquiries under a competent tribunal, and publishing the information obtained, would lead to remedying defects of construction, and diffuse a knowledge of the details of iron shipbuilding, which is said to be so much needed," and "Any attempt to use the existing machinery of Lloyds' Register for the detection of unseaworthy ships would tend to alter the character, and thereby detract from the utility of this *voluutary* association. The Commitee of Lloyds' Register possess the special knowledge qualifying them to regulate all details connected with the construction, equipment, and survey of merchant ships. If, however, this knowledge is to be used for a national purpose, the Committee must be recognised as a public institution, and be invested with compulsory powers. On the other hand would it be practicable, and if practicable, would it be prudent, to enact that the Government should superintend the building of all merchant ships, and should inspect them periodically? The supervision of the loading and the regulation of the stowage would become equally the duty of the Government. It is difficult to assign a limit to such interference pressed upon the Government by benevolent men unacquainted with mercantile affairs and forgetful of the infinite variety of causes which lead to disasters at sea. The Board of Trade have already taken upon their department the responsibility of detaining all ships which they may have reason to believe are unseaworthy. They are also attempting, by registering the draught of water of merchant ships, to control the loading of vessels. Before we recommend additional legislation for the regulation of merchant shipping we are anxious to obtain further information from experienced men, when they shall have weighed the conflicting difficulties with which the subject is surrounded."

We look forward to the continuation of the labours of this Commission with hope, but we gather that the mass of evidence already laid before them, so far from settling some of the points raised, will be found to be chiefly valuable as suggesting topics for further examination: for much of the evidence opens up questions which have hitherto been lost sight of.

WRECKS OF SHIPS AT THE CAPE.—A MYSTERY UNVEILED.

Mr. Fleming, when in the Colonial Parliament, carried a motion, appointing a commission to inquire into and report upon the light at Cape L'Agulhas, in order to select a site for another light on Cape St. Francis, and also to consider other matters pertaining generally to lights on the coast. The Commissioners reported favourably on all Mr. Fleming's suggestions. Seeing nothing done, however, we believe he addressed himself afterwards to the Commissioner of Public Works, and received a reply that the Government were in communication with the Board of Trade in London on the subject. So far so good. The Department in London is, we may fortunately assume, acquainted fully with what we are about to state now for the information of our readers. From what is reported to have been stated to the Colonial Parliament, it would appear that the Colonial Government have, as yet, taken no steps to carry into effect the recommendations of their late Commission on Lighthouses, because the Imperial Government has not taken the initiative. The Colonial Government is waiting for the Imperial Government, and the Imperial Government for the Colonial Government. A sum of £500 was voted for the Cape St. Francis lighthouse, but nothing whatever has, so far as we have heard, been done, or, if anything has been done, nothing is known to have been done, towards making a commencement to spend even that sum. Of the thirty or more wrecks on Struys Point, Cape L'Agulhas, and in the neighbourhood, many have occurred through the doubly mischievous character of L'Agulhas light. The light is, at present, not only mischievous in that it is (from bad adjustment and worse treatment) only of the power of a third, instead of a first-class, light; but, further, because it is placed in a position where it cannot be seen from the most important and dangerous part of the coast, Struys Point. Year after year the same cry has gone up, from one wrecked ship after another, that had the light been where common sense has decided it ought to be, such disasters could not have happened. The very character of the light alone is fatal to its being serviceable in thick or hazy weather, for being *fixed* (and very dull) and in a locality where bush and grass fires are very frequent, and constantly mistaken for the light, it now leads to loss. The L'Agulhas light is, of course, not responsible for the blunders of careless or culpable navigators; but still a light on the turning point of the continent ought to be of such a character, and in such a place, that not even bunglers could find excuses for mistaking it for anything else, or anything else for it. No tinkering or patching up of the old light can be of service to navigators; the light itself is in the wrong place, and we are sorry to have to state

emphatically, has been known to be in the wrong place ever since it was lighted in 1848. When, however, the discovery was made by actual measurements that the light was wrongly placed, the tower had been completed, and nothing was left but to carry out the scheme so unfortunately determined upon without due regard to the site. We are advised by competent men, and fully believe, that there is no remedy but to remove the lighthouse as well as to change the character of the light, so that bush and grass fires cannot by any possibility be mistaken for it. The proposed and promised lighthouse on Cape St. Francis, near to which many wrecks have taken place, ought next to be considered. It is undeniable that a light there is a necessity. Every practical navigator who has rounded the Cape knows, from personal experience, what a godsend would be the value of a light at St. Francis to vessels homeward bound caught in westerly gales off this part of the coast. The *Bosphorus*, steamer, Her Majesty's ship *Osprey*, and many others, were, undoubtedly, lost, owing to the want of a light here. The *Bird Island* lighthouse is completed, and the light exhibited is *red*.

Again, as to charts: some portions of the Cape Coast between L'Agulhas and Recife are out five miles in latitude on charts carried by vessels attempting to round the Cape, and in the Admiralty chart it was, until within a few years, five miles out in many places between these points. The Admiralty have, with the solicitous care of the hydrographer and his staff, corrected their charts; but we are not aware that attention has until now been widely or prominently called to the inaccuracies of old charts; and so it happens that many ships, whose masters believe that their old charts are correct, may, when they think themselves five miles out at sea, as the charts place them, really be in dangerous proximity to this coast, which is so prolific in wrecks. A bad light and incorrect charts account for the coast between Recife and Agulhas being the burial ground of innumerable British ships. The fragments of many ships that have sailed from port and have never been heard of since might be found there. The coast is strewn with wrecked timber. It does not follow, as many ignorant people think, that, because a ship is never heard of after leaving port, she has been lost on account of ill-stowage or unseaworthiness. No one ever can know, for instance, how many seaworthy homeward-bound ships from India, China, and Australia have perished at such places as L'Agulhas.

With respect to a widely-spread and unaccountable belief that the compasses of ships on the coast are affected by the land, it is, we are advised, as ill-founded as it is absurd.

The magnetic variation of the compass given upon the charts, and in the sailing directions, has been determined on the various headlands by pneumatic compass and other magnetic instruments, and if such local

attraction existed, these observations would have determined it; but even if it did exist, its influence could not reach a ship in the offing. The only recorded instance of such influence is to be found in the voyage of "Sinbad the Sailor," an instance established as a fact beyond dispute, since it is recorded by the celebrated navigator himself.

ON THE CAUSES OF LOSSES OF BRITISH MERCHANT SHIPS.

By Sir E. Hornby, Chief Judge of the Supreme Court of China and Japan.

The following copy of a letter (addressed to the Earl of Shaftesbury) has been forwarded to us by a correspondent at an outport, who informs us that it has been sent by the Board of Trade to the various Local Marine Boards, for their opinion on the points raised by Sir E. Hornby. This letter, and the remarks of the Local Marine Boards thereon, will constitute a valuable piece of evidence for the consideration of the Royal Commission now inquiring into the subject of unseaworthy ships and the causes of loss at sea. We commend it to our readers as a remarkable confirmation of the views we have advocated—viz., that incalculable harm has been done by humanitarians in stirring up "poor Jack" to believe that he is sinned against, and that it is the owners of ships, and not the crews, who can prevent shipwrecks and marine disasters. What we have always urged is that the careful, and thoughtful, and honest handling and navigation of every ship at sea, and not a survey of every ship in port, is the best preventive against disaster. If we want now to do anything to improve our Mercantile Marine, we must dismiss from our minds all cant and humbug about poor Jack being sinned against, and must put our shoulders to the wheel to render him amenable to discipline, and the master and officers reponsible for their conduct towards seamen and owners, when absent from the United Kingdom.

It is not easy to understand why owners of ships do not insist, as they have power to do, on a medical examination of seamen before engagement. There is another point, also, as regards the medical examination of seamen, and that is, seeing that the British taxpayer spends very large sums of money to bring home diseased, and distressed, and lunatic seamen, left helpless abroad, is it not to the interests of the nation at large that this medical examination of seamen should be enforced, seeing how much good it would do in saving public expenditure, in contributing to the safe navigation of ships, and in preventing loss of life at sea. This is a point we would strongly put forward for serious consideration. That

some such measure is urgently needed, and that some loss of life and property are directly to be attributed to the shipment of diseased seamen, is forcibly shown in the following letter :—

"To the Earl of Shaftesbury, K.G., &c., &c., &c.

"H.B.M. Supreme Court for China and Japan, Shanghai, 20th June, 1873.—My Lord,—Seeing your name on Mr. Plimsoll's Committee, and foreseeing that legislation, in which your Lordship is certain to take a conspicuous part, on the subject of merchant shipping and merchant seamen, will, in all probability, be the result of the present well-meant agitation, I venture, even without being asked, to state my experience of the last eighteen years as a judge whose duties have brought him into constant connection with shipping, with a view of offering a caution against, and preventing hasty or ill-considered and one-sided legislation on the subject.

"No doubt instances will be found of overloaded, badly built, and badly found and insufficiently manned ships, and of owners who sacrifice the safety of their crews to an ill-judged economy—of charterers whose only object is to fill the vessels they hire beyond what is safe—and of merchants and owners, the one offering and the other taking differential freights, simply to secure quick passages, *but you will also find that many of the losses that take place are the direct result of the idleness and incompetency of the crew, of their insubordination, and habits of drunkenness.*

"The 'Noble British Tar' is almost a creature of the past, and, except on board men-of-war and the best and most expensively managed ships of private companies, he is seldom to be found. His place is filled by dissipated, disease-worn men, the victims of vice, who take no pride in either themselves or the ships they are employed in, who are physically and morally unfit for the employment they have obtained, and who, on emergencies, are not to be relied on. It has been the fashion of recent legislation to dry-nurse seamen, to surround them with privileges and immunities denied to any other class of labourers, to treat them, in fact, as petted children, whose innocence of the ways of the world require them to be sheltered from designing cheats, and who, especially *as against shipowners* and employers, must be carefully protected. Now, after a long experience, I know of no class of men who are more alive to their own interests, more able to make a good bargain for themselves, or to keep themselves clear of being imposed on, than seamen, or who seek for, and obtain, employment for which they know themselves to be unfitted, or who feel less and care less for the obligations which such employment carries with it. Is a higher rate of wages to be obtained in a foreign port of arrival, then desertion becomes the rule; broaching of cargo is a common offence; cases of refusal of duty, drunkenness, and insubordi-

nation occupy the time of the police magistrate, to the exclusion of almost all other business; bills are run up at shops; goods, such as clothing and drink, are obtained on credit, and the clauses of the Merchant Shipping Act, providing that Courts of Law shall not take cognizance of bills against seamen above a certain amount are availed of as defences; while the brutality of seamen towards natives in Eastern countries makes the name of Englishman hated, and threatens daily to complicate international relations. I am not, my Lord, speaking only of ordinary and able-bodied seamen, but I include officers as well as men. I am far from wishing to libel a whole class, but what I am anxious to do is to prevent an idea gaining ground that it is the sailor who is always wantonly sacrificed to the interests of those who employ him, and that legislation has failed in doing its duty by him, when the fact is that his own vices, his utter selfishness, and his reckless disregard of any other interests than his own, are the principal causes of the risks he incurs, and the misfortunes which befal him. Nor is the shipowner, even when he is, as he often may be, guilty of the charges brought against him by Mr. Plimsoll, the only person to blame. Rather than not do the business, the insurer is willing to insure without reflection or inquiry. The consignee, or owner of cargo, seeks for, and by competition obtains, a rate of freight so low that he knows the shipowner must either work at a dead loss, or neglect, on the ground of economy, necessary precautions. Insurance renders the merchant regardless of the seaworthiness of the vessel, or the competence or the sufficiency of the master and crew, and even when to secure a quick arrival of his cargo he is willing to pay a higher rate of freight, he may be said to stipulate that everything is to be sacrificed to speed. The ocean races, which take place annually between China and Europe, are instances of this. Moreover, the shipowner runs risks which perhaps are known only to himself, or, if known by others, are not taken into consideration by those who are so ready to condemn him. The law as it at present stands places him almost entirely in the hands of the master, the consignee, and the storekeepers of foreign ports. The loss which a master may do his owner by bottoming the ship unnecessarily, by forced sale of cargo, by collusion with consignee and foreign storekeeper, by carelessness in navigation, by want of activity in foreign ports, is incalculable. It is all very well to say that the law provides for such misconduct when proved, but proof is constantly unattainable, and I have known many cases where I have been obliged to enforce obligations against ships, even to their forced sale, while I have been convinced that some roguery was at the bottom of the case. To these risks may be added those which arise from ignorant or careless stowage of cargo, resulting in litigation and heavy damages; others which arise from the compulsory employment of pilots, often unskilled and ignorant on foreign

stations; and the power which insurance agents have after accidents, and alone or in collusion with those interested in effecting repairs, of either refusing to put a vessel on a letter, or of insisting that such an amount of repairs shall be done inconsistent with the value of the vessel. I have known cases where a refusal, based on both these grounds, to reclass a vessel, has necessitated a forced and ruinous sale, no sooner completed than the vessel, in other hands, *has been classed, although not a tithe of the repairs originally insisted on have been effected.* Again, in many ports customs prevail which are extremely onerous to the shipowner. I name one or two. In some ports ships on the berth are often obliged in deference to custom, notwithstanding they are loading at a fair agreed freight, to lower it to the amount at which any rival may be willing to ship cargo; thus, suppose a ship loading at £2 10s., if another ship agrees to load at £2, the first must sacrifice the odd 10s. it has contracted for on all the cargo already loaded, or to be loaded. Again, by custom, or the rules of Chambers of Commerce, arbitrary rules are often made relative to brokerage on charter parties, to percentages on disbursements, collecting freights, to all of which a shipmaster must agree on the part of his owner, or forfeit the support and assistance of those on whom he relies for his homeward freight. It is true that many of these risks might be avoided if shipowners would pay higher rates of wages, and thus obtain a higher class of men as officers and seamen; but although *high wages undoubtedly tempt better men into the service*, they are not infallible securities against able navigators being unscrupulous men. Some of the most able commanders of ships that have been concerned in cases before me have been men whom I certainly would not have trusted with the care of any interests I valued. Certificates of competency are no test of high principles or moral character, nor are they always very trustworthy in other ways. Many a man may pass an examination for which perhaps he has been crammed, and yet be wholly deficient in those qualities which are absolutely necessary in the service for which his examination is a passport. The fact is, my Lord, that many causes contribute to the loss of life and property by wreck at sea, wholly beyond the control of the shipowner. There is the shipbuilder, who has it in his power to scamp his work, secure from detection. In the case of steamers, the engine-makers, who have pet schemes, patents, or interests to favour, there is the insurer, who, rather, as I have said before, than not do business, will insure anything without examination or inquiry; the merchant who cares for nothing except a cheap rate of freight, or an excessive speed; the master, whose personal interests are frequently antagonistic to his owners; the crew, reckless, selfish, and careless; and the thousand and one opportunities which occur abroad to make the life of a distant shipowner a curse and burden to him. I am not, my Lord, romancing, nor am I

arguing a case on behalf of the shipowner. I only number one amongst my friends, but during a long experience on the bench, in shipping and Admiralty cases, there is no one who has excited my commiseration so much as the unfortunate and distant shipowner.

"I trust your Lordship will not think that I am against legislation, even if it will only provide against and prevent a few of the evils which undoubtedly exist; but I am most anxious that the questions involved in Mr. Plimsoll's agitation should not be dealt with piece-meal, but as a whole. By any other course the snake will be scotched, but not killed.

"Already the idea has got abroad amongst seafaring men, on foreign stations, that every license is to be accorded to them; that they are to be free to fulfil or avoid contracts, at their pleasure; to be obedient or disobedient, as it suits them; in short, to do what they like, irrespective of all authority; and not only the sailor feels this, but it is spreading rapidly through every rank of the service.*

"What is wanted is a thorough inquiry into the practical working of our marine legislation, not at home only, but also in foreign ports, and into the various causes, at home and abroad, which have produced the disasters to which Mr. Plimsoll refers; not limited to the conduct of shipowners, only, but to that of shipbuilders, of masters, crews, pilots, merchants, and insurers, in short, to every one, more or less connected with shipping, and to those portions of our mercantile and shipping law which affect seafaring men and the owners of ships.

"As regards masters and crews, to whose incompetence and misconduct I greatly attribute the accidents to which English shipping has lately been peculiarly subject, I think it was a great mistake to abolish those portions of the Navigation Laws which provided for apprentices,† the employment and bringing up of boys from an early age to sea service,

* This paragraph is as overwhelming, as it is unsatisfactory and conclusive. We have in our pages pointed out these facts, over and over again; and now, from an independent and unquestionable authority, we find all we have said confirmed to a degree that we never anticipated.

† As regards apprentices, the compulsory law only existed for a very few years —viz., from 1844 to 1853—and it was not that law that created seamen. If any scheme for the enrolment of apprentices is now needed to supply the wants of the shipowner, it would be originated by shipowners. As shipowners have not organised any scheme, but as only a few shipowners, here and there, have expressed views in favour of compulsory apprenticeship, it cannot, so far as shipowners are concerned, be thought of much value by them. Let any number of shipowners form a society, or band themselves together to urge the Legislature to take steps in this direction, and let them be supported by the body of shipowners; let this come to pass and there would then be some reason to believe that a system of apprenticeship is necessary. We do not believe it is necessary, and we further believe that any apprenticeship to the sea, beyond three years, will, from the tendency of the labour market, soon be impossible.

and the opening of the British Mercantile Marine to foreigners.* Few men believe more thoroughly than I do in the principles of free trade, but I cannot help thinking that its principles have been injuriously, from a simply national point of view, stretched with reference to shipping. The Mercantile Marine is now, so far as ocean shipping is concerned, recruited from loafers and longshore men. Not one half of the crews that come to China, for instance, are seamen in any sense of the word, and it is distressing to see the terrible physical state of weakness to which these men are, by the indulgence of many vices, reduced. Discontented and miserable on their voyage out, many ships arrive with their crews in such a state of insubordination, that it is wonderful how they reached this distant port. Then comes a series of charges of refusal of duty, incompetency, drunkenness, and quarrelling on the part of the master, followed by recriminatory charges of cruelty, severity and ill-treatment on the part of the men. Continuous drunkenness on shore and in port is indulged in to drown the recollection of the voyage, or compensate for its short comings; while imprisonment for the men, and consequent expense to the Government, and great loss to the owner, completes the picture. Yet these crews are often well, and in comparison with the wages earned by other classes of labourers, highly paid. Then, again, there is often a sad medley of nationalities on board a British vessel, a fruitful source of quarrelling and bullying, and often of danger, because orders given are delivered in a language unknown to the party to whom they are addressed. Few ordinary seamen look to advancement or promotion; their habits are opposed at most to the possibility of it, and it may almost be said that the sea has ceased to be an enduring employment in the sense of men making it a regular and permanent calling.

"As a rule, masters are underpaid. Still I much question whether, in many instances, regard being had to their merits, their conduct, or their reliability, they are really entitled to more than they get; *irregular sources of profit, beyond their stipulated wages or salary, are therefore sought for, and easily found.* Certainly, many of the masters and officers are utterly unfit to command their fellow-men, and the complaints made against them on the part of their crews are too frequently well founded.

"The remedy for this seems to me to be in raising the standard of education;† in bringing lads up to the service who have previously

* Under the old law 25 per cent. of the crew might have been foreigners. Messrs. Hamilton and Gray have pointed out in their report that the present proportion of foreigners is 10 per cent., so that, without any restriction whatever as to the employment of foreigners the total number employed is 15 per cent. below what it might have have been under the old system.

† We think that this is being rapidly effected by the increase in the Standard of Examinations, and by the *Worcester* and *Conway* training ships.

received some elementary instruction, to secure their good treatment on board ships and in the service. On this must necessarily follow a higher tone of conduct, morality, and knowledge, amongst the officers, and of course *higher pay;* a simple knowledge of certain rules of navigation, or the fact of a crammed examination having being passed, must not be allowed to suffice to secure a certificate of competency to any rank, but vigorous inquiry must be made by authority into the conduct and past life of boys, apprentices, and officers, as they are advanced step by step, and from rank to rank.

"As a rule, my Lord, I think you will find that the largest shipowners (especially those who own steamships), and whose vessels make long voyages to India, China, and Australia, are careful and liberal in their dealings with their men, much more so than the men are mindful to fulfil their obligations towards their masters, and that you will chiefly find ill-judged economy in the building, fitting, and manning, and sailing of vessels amongst the smaller shipowners, whose craft make short voyages; although it is surprising how many find their way out to China and the Colonies, and who own one or two, or three ships, the property of which is divided among many, in some cases the masters holding one or more shares.

"A change in our Merchant Shipping Law seems to me to be much needed, especially with reference to the authority of masters, their power to bottomry ships, freight, or cargo, and their power to sell cargo to defray expenses consequent on maritime disaster, and in rendering ship property more easily transferable, especially by way of security. At present there is no class of property so difficult to sell or mortgage as ships, or in the doing of which greater delay is entailed. Much also must be done to secure more efficient discipline on board ship to obtain a better class of sailors and officers, and in reviving apprenticeships and the education of lads to a seafaring life.

"No increased responsibility on the shipowner, or increased protection to the seamen, can be fairly afforded by legislation unless all these matters are fully considered. To simply increase the former, would be to ruin our shipping trade and throw it into foreign bottoms; while to increase the latter would be a direct encouragement to those vices which are the curse of seamen. I have, &c., &c., &c., (signed) EDMUND HORNBY, Chief Judge."

BLUE BOOK ON RAILWAY ACCIDENTS.

With reference to the alarming statements and agony-piling concerning the deplorable loss of life at sea, we reprint from the columns of our valuable contemporary the *Hour* the following abstract of railway accidents in the United Kingdom for the past twelve months. We would remind our readers that the lives lost by such accidents form only a small part of the total loss of life from preventible causes on land, and the comparison of the numbers of disasters at sea and on land will serve to strengthen arguments which have, from time to time, been advanced in these pages. The average number of lives lost at sea on and near our coasts is 791 per annum, taking an average of five years, whilst the number of persons killed by railway accidents for the year 1872 is no less than 1,145, besides injury to 3,038 more; 632 of the lives lost were those of railway servants, and of the same class 1,885 suffered injuries. These figures speak for themselves with great force when the public mind is so much agitated about loss of life at sea :—

"The slaying of 1,145 human beings, and the maiming, more or less seriously, of 3,038, is an achievement greater than has been accomplished by the combined crusade against human life of the Republicans, Intransigentes, and Carlists of Spain since the abdication of the last monarch of that unhappy country; and yet, according to returns supplied by themselves, and which are not likely to be exaggerated, the railway companies of the United Kingdom are able to present this handsome 'butcher's bill' as the result of their operations during the past twelve months. This information may be gathered from a Blue Book of 196 pages, which has just been issued. Blue Books are proverbially dry reading; but, although the present one is a mere catalogue of 'accidents' given in the language of the railway companies themselves, and unaccompanied by any disquisition on the causes of the 'accidents' or any report upon them, it is quite as startling and 'sensational' as any work of over-wrought fiction which ever emanated from the fertile brain of the late Mr. Monk Lewis. It has, besides, the merit of novelty, for it has been issued in accordance with the provisions of the Railways Regulation Act of 1871, and is the first return of the kind which has appeared. But, startling as are its contents, they are rendered more so by the statement of the Board of Trade, that it is doubtful whether the terrible catalogue of deaths and injuries is complete, as, notwithstanding the penalties provided by the Act, some of the companies may not have made full returns. This is rendered more than probable by the pathetic confession of the board that they have no means of checking or completing the returns forwarded to them by the several railway companies.

We do not think, therefore, that under these circumstances we should be exaggerating the slaying and mangling achievements of our railway companies, if we added a few more score to the 1,145 deaths and the 3,038 injuries which they admit to have occurred on their lines during 1872. A novel feature in this Blue Book is that it contains the only return of accidents to their *employés* which has ever been furnished by our railway companies. Hitherto such trifles have been passed over as unworthy of notice by railway directors. About one-half of the unfortunate killed or injured during the past year were servants of the companies or contractors, and the vast majority of these are set down as victims of their own misconduct or want of caution. 'Dead men tell no tales.'

Taking the figures as they stand, we find that the number of railway servants killed by their own fault was 568, whilst 64 were slain by causes beyond their own control. Those injured under the former heading were 1,019, and those under the latter 376. Of persons who were neither servants of the companies nor passengers, 258 'trespasses and suicides' were killed, and 105 injured. Of these 70 were killed and 23 injured at level crossings, and 58 deaths and 51 injuries were inflicted in various other ways. The number of railway passengers killed by causes beyond their own control, is modestly set down as only 24, whilst the number of foolish passengers who 'went and got killed' through their own fault amounted to 103. In the matter of injuries the companies admit that whilst 215 passengers were maimed or mangled through their own fault, 1,247 victims were innocent of contributory misconduct, or want of caution. We are further informed that of the 127 passengers killed only 19 owe their deaths to accidents occuring to the carriages in which they were travelling, whilst to this cause are attributed 1,233 injuries. Falling between the carriages and the platform whilst the trains were in motion caused the deaths of 48 passengers and injuries to 53; and 10 were killed and 117 hurt by falling on to the platform or the ballast in entering or leaving the trains. Crossing the lines at stations caused the deaths of 16 passengers, and two were injured by the same cause. Two persons were killed and four were injured by falling down stairs in their hurry to catch a train, and 26 cases occurred—of which six ended fatally—of people falling out of trains while they were in motion. To 'other accidents' are attributed three deaths and 19 cases of injury. 'Accidents' to trains caused the deaths of 19 passengers and 42 railway servants, and to the same cause is attributed injuries to 212 railway servants, and 1,233 passengers. The chief causes of these 'accidents' are stated to have been collisions with goods trains, broken rails, failure of axles, and running over cattle and other obstructions. There were 55 collisions between passenger trains, causing injury to 414 passengers, and 15 pas-

sengers were killed and 482 injured by collisions with mineral and goods trains. Three deaths and 152 injuries were caused by trains leaving the rails. The failure of machinery, which occurred 62 times, caused the death of only one passenger, and 162 cases of failures of axles resulted in injuries to only one. Thirteen instances of trains running into stations at too high a speed caused the deaths of 73 passengers, and one passenger was killed and 61 injured by trains, running off through improper 'setting' of points. We have merely glanced at a few of the leading items in the 'butcher's bill' of our railway companies. The Blue Book in which it appears will repay perusal. We venture to say that few can study it without coming to the conclusion that, even according to their own returns, the railway companies are directly responsible for no small proportions of the casualties which have occurred on their lines during the past year. It appears at an opportune moment, and we trust it will have the effect of leading to some legislative enactment for the better protection of the lives and limbs of railway passengers and railway servants."

SHIPS' BOATS.

A POINT urged in the recent humanitarian agitation is, that no steamer should be allowed to proceed to sea with fewer boats than can carry all persons on board. This is, of course, utter nonsense, for no emigrant ship can be provided with boats sufficient to carry at one time all her passengers; and if she could, they would, in the case of ships foundering in mid ocean, be of but scant use, unless they could also carry provisions and water.

Every large wreck tells us in unmistakeable terms that the boats are of but small use. The boats of the *City of Boston* saved no one, and the life-saving appliances on board the *Atlantic* and the boats on board the *Northfleet* did very little towards saving life. It is an acknowledged fact that, in emergencies, not often a third, and sometimes not any of the boats now carried, can be made of any use in saving life.

Boats, rafts, or other appliances for saving life, are absolutely useless in emergencies unless they are carried on the upper deck and are available, and always ready for launching; and the question therefore resolves itself into this—viz., how many boats can be so carried. It is possible that some appliance in the nature of a raft or seat may be invented to supplement or to supersede the boats now carried, or a part of them; but if this should be so, the raft or other appliance will be useless unless

it is carried on the uppermost deck, and is there so carried as to be made at once available. Those who advocate the use of rafts are bound to find a place in which they can be carried.

As regards boats, we have just found a memorandum written some years ago by Mr. George Barber, the talented and deeply lamented late Chief Shipwright Surveyor of the Board of Trade. This memorandum was written several years ago (March, 1867), but it is as useful now as ever it could have been. We reproduce it :—

"Many things have to be considered, when determining the number, size, and position of boats to be carried in a steamship.

"Nearly all screw steamships of the present day (engaged in the foreign trade) have a range of deck-houses extending the whole length of the ship, from the poop to the forecastle, leaving an alley-way or passage of from 6 to 8 ft. in width on each side, between the deck-house and the bulwarks.

"Now, the boats cannot be carried in these alley-ways, for they would block up the passage, and would have to be hoisted to a height of 6 to 7 ft. before they would clear the top of the bulwarks. They cannot either be carried *upon* the deck-house, for they would then be too far inboard for the davits to get them out.

"The boats are therefore carried upon skids, or beams, which extend from the sides of the deck-house to the top of the bulwarks, and are supported by chocks which are hinged to the upper side of the skids or beams.

"But this causes the boats to be at a great height above the water-line—generally in large Atlantic steamers at about 17 ft. above it; and as merchant screw steamers are, as a rule, from their proportions and form, tender or crank, it is desirable to reduce as much as possible all top-weight.

"A lifeboat of 833 cubic ft., with its davits and all its equipments, does not weigh much less than 3 tons. The eight boats and davits of an Atlantic steamer will not weigh much less than 20 tons.

"Then the safety or security of the boats at sea must be considered. They must not be placed at those parts of the ship most exposed to the action of the sea.

"In practice it is found that boats cannot be carried *before* the fore rigging.

"The spaces between the fore and main, the main and mizen, and abaft the mizen rigging, are, therefore, the only parts of the ship's side suitable and available for boats.

"But, when these places have been selected, care has to be taken that no back-stays or braces, or funnel-shrouds, lead outside the boats, or in the way of the swing of the davits; for if they did they would interfere

with the free swinging outboard and clearance of the boats. Care has also to be taken that the position of the boats is such that they will not be injured by, or interfere with, the working of the booms.

"In practice, it is found that Atlantic screw ships, of 320 ft. long, and 2,500 tons gross tonnage, and carrying a crew of 95, all told, cannot efficiently carry at davits more than four boats on each side. The *Moravian* may be taken as a fair illustration of the present class of ocean screw steamships. She is 320 ft. long, is barque-rigged, has a crew as follows:—

1 Master	
5 Mates	
1 Boatswain	
1 „ Mate	
4 Quartermasters	
1 Carpenter	
1 Joiner	
1 Sailmaker	
1 Doctor	
1 Purser	
25 A.B.'s	
1 Sailmaker	
43	
5 Engineers	
25 Firemen and Trimmers	
73	
18 Stewards	
1 Butcher	
1 Baker	
2 Cooks	
Total 95 all told.	

She is fitted for ... ... 630 steerage
And ... ... 70 cabin.

Total 700 passengers

And carries

2 Boats abaft mizen rigging	$26{\cdot}3 \times 7{\cdot}0 \times 3{\cdot}0 = 1102\frac{1}{2}$
2 „ before mizen rigging	$26{\cdot}3 \times 7{\cdot}0 \times 3{\cdot}0 = 1102\frac{1}{2}$
2 „ before main rigging	$28{\cdot}6 \times 7{\cdot}0 \times 3{\cdot}0 = 1191$
2 „ before funnel and abaft fore rigging	$28{\cdot}6 \times 7{\cdot}8 \times 3{\cdot}3 = 1420$
8 Boats of	4816

All of which are built and fitted as lifeboats.

She carries also 36 lifebuoys and 48 lifebelts for the crew.

"In all the large steamships trading out of Liverpool, each boat is marked on the bows with a distinguishing number, and each man, when he joins, is supplied with a metal number, corresponding with that on the boat to which he is stationed. When the boats are periodically exercised, he wears this number on his breast, and officers and men take their stations at their proper boats.

"In screw steamships of less than 1,000 tons, and of 240 ft. length, and under, it is the practice to carry one cutter on each quarter, one lifeboat on each side of the deck-house or bridge amidships, and a jolly-boat at davits in the waist.

"Steam vessels of ordinary build and arragements, and carrying the usual complement of crew, cannot well and efficiently carry more boats than they do at present.

"It is questionable whether any good would result from having more boats on board than could be suspended at davits, or be worked by the crew.

"Better to have the present number of boats, kept ready at davits, and periodically exercised, than to have *extra* boats, which could not be manned by the crew of the ship, which could not be got out until the boats at the davits had been set free, and which would interfere with the working and movements about the deck of the vessel.

"Every steamer has materials on board from which, if time and circumstances would permit, a raft could be constructed.

"Sailing shipowners are now becoming aware of the fact that a long-boat, stowed on deck, is useless as a means of saving life. They are of opinion that not one long-boat out of twenty would be of any use in the water. It is used for keeping vegetables, sheep, and pigs in, is never got out, and rots in its chocks. Two boats at davits are now, even in sailing ships, being substituted for one long-boat on deck."

CAST-IRON STEAM PIPES.

(Communicated—being a view somewhat different from that contained in our former articles.)

THE attention of a great many marine engineers has lately been drawn to a controversy between a department of the Government and a certain class of engineers, as to the relative merits of copper and cast iron for the construction of steam pipes for marine steam engines. From what I can understand, the question at issue is, simply, whether for the construction of steam pipes for marine work, cast iron is at all times and under all circumstances, as safe a material as copper, and also, when cast iron is used for this purpose, whether a Government surveyor is justified in refusing to take upon himself the responsibility of its safety.

Beyond being professionally interested in the question, I will not be affected, whatever may be the ultimate decision arrived at; but, whether cast iron is tolerated or not, I feel tempted to point out a few facts with respect to the two metals, copper and cast iron, and to express my own unbiassed opinion of the question, based upon those facts, and the experience I have had in my engineering career.

Now, for a judge to form correct judgment he must be unbiassed. Upon what grounds is cast iron objected to by the Government Board

in question? Simply because its treacherous character is known, and they object to expose the public to extra and unnecessary risk, and to allow their surveyors to take upon themselves the responsibility; and thus, by them, the question is treated impartially and strictly upon the merit of the metal. On the other hand, those who maintain that cast iron is, in all respects and under all circumstances, as safe a material as copper for the construction of marine engine steam pipes, will invariably be found to be those who would be pecuniarily affected by the substitution of copper for cast iron, and thus their judgment is prejudiced.

Great Britain stands at the head of all the maritime nations, and to keep her position, as such, no reasonable expense is grudged by the public for the ships of the Royal Navy, to be kept in the most efficient condition. The most talented men in naval matters are employed, and the material and workmanship are of the best, consequently Royal Naval practice, especially in marine engineering matters, may be looked upon as nearly right as it is possible to be, short of perfection. Now, in the Royal Navy, such a thing as a cast-iron steam pipe is unknown. It is needless to make further comment upon such a significant fact. In the largest ocean steamship companies the steam pipes are invariably made of copper; and the only persons that I know of who advocate the adoption of cast iron for steam pipes are those who have them already, and who do not wish to go to any extra expense in removing them and renewing them in copper, and those makers who take contracts at such a "low figure" that the substitution of cast iron for copper to any extent would be to their pecuniary advantage.

It appears that the advantages possessed by copper over cast iron are marked and numerous. Firstly: Copper is fibrous, and although a pipe made of it might, either through excessive pressure or weakness through bad workmanship or age, burst, it would only rip, and not fly to pieces; it is one of the most ductile and malleable of all metals, its fracture is similar to that of wrought iron. Secondly: You can insure its soundness and uniformity of strength, as before it is made into pipes the copper is in sheets. The material for the bends of copper steam pipes should be slightly thicker than that for the straight parts, to compensate for the spreading of the metal in making the bends. Thirdly: On account of its tenacity being about 30,000 lbs. per square inch, or about ·6 of the strength of wrought iron, pipes can be made of it, even although its strength does decrease slightly as its temperature rises, much lighter for equal strength, and for the same purpose, than they can be made of cast iron, notwithstanding the fact that the specific gravity of copper is to that of cast iron about as $1\frac{1}{4}$ is to 1. Fourthly: It does not oxidize at any heat that steam can in ordinary cases be used at in the engines;

thus it retains its original strength, and can be depended upon. And, Fifthly: Any slight and separate movement of the bodies to which it is attached will not, with any reasonable length of pipe, affect its security, as it will give to the motion.

Now let us turn to the cast iron. The questions are: How can we get a good cast-iron pipe? If we can get one, how can we judge of its strength? and, Can we rely on it? Cast-iron pipes should be cast of soft, tough metal; but whether they are or not is only known to the founder, as when once they pass out of his hands it entails a deal of trouble even to ascertain approximately the nature of the metal. It may be good, and able to bear over the average tensile strains; but, on the other hand, it may be bad, and almost tried to its utmost strength with a pressure that, judging from its appearance, would be only about $\frac{1}{8}$th of its ultimate strength, in which case, if used as a steam pipe, a comparatively slight shock, such, for instance, as would be caused by the suddenly opening of the stop-valve; or even stopping the engines suddenly, would be, in all probability, sufficient to cause a disastrous explosion, possibly entailing the loss of life, as the material of such a casting would be, comparatively, brittle, and in case of its giving way under steam pressure, would fly to pieces like a shell. Cast-iron pipes, to be sound, should be cast on end, with a considerable head. But how can an engineer know, from an external inspection, whether a pipe has been cast vertically or not? He truly may sound, drill, and gauge it, but, to do so, it will be necessary for it to be disconnected and taken down. An inspection like this might satisfy an engineer surveyor, but the next, as, I believe, he has to personally take the responsibility of the safety of that pipe, would be quite justified in having it pulled down again, redrilled, gauged, &c., before he would be satisfied; and this sort of thing might, and in all probability would take place, every time the ship was surveyed by a Government surveyor. Now, every marine engineer can imagine the amount of work that pulling down the steam pipes, especially when they are made of cast iron, entails. So it is not necessary to say anything more on that head. Before fitting up, all cast iron steam pipes should be either gauged or drilled to ascertain whether the thickness of the metal is uniform, as that is another cause of doubt and danger.

Cast iron is seldom used, even for the smallest pipes, less than $\frac{3}{8}$th thick, and a general rule is, that, the thickness of the metal, for pipes, should not be less than a mean proportional between the internal diameter of the pipe and $\frac{1}{16}$th of an inch; but this rule is scarcely applicable to steam pipes. In all cases the flanges should be well bracketed. Cast iron contracts lineally about ·01, or approximately $\frac{1}{8}$th of an inch in a foot —in cooling from the melting-point to the ordinary temperature of the

atmosphere—and any abrupt variations, in the thickness of the metal in a casting, causes a difference of contraction which either cracks the casting at once, or overstrains, and thus weakens the iron. It also expands lineally about ·001 in rising in temperature from the freezing to the boiling point of water, or in 180° F. This may not appear much, it being only about $\frac{1}{8}$th of an inch in 10 feet; but it is quite enough to cause serious damage, unless provision be made to allow for contraction and expansion.

On account of the comparatively small strength of cast iron in comparison to that of copper to resist tension, to bring the strength up to that of copper, the amount of material has to be increased; and although, bulk for bulk, copper is heavier than cast iron, yet, on account of the increased bulk, a pipe made of cast iron would be considerably heavier than a pipe of the same internal diameter, and length, and equally strong, made of copper. Again: On account of its extra weight, bulk, and the material, it would be much more difficult to fit and handle than the copper pipe would be; it is not nearly so reliable, as regards its apparent strength, as the copper pipe would be; and after it has served its purpose as a steam pipe it is, comparatively, useless and valueless, whereas a good copper pipe will always fetch a good price as old copper; for to estimate correctly the comparison in value between a pipe of cast iron and one for the same purpose made of copper, their selling values, as old metal, after they have finished their work as pipes, should be taken into account, in which case the difference in value is not compensated by the additional risk in substituting cast iron for copper in the construction of steam pipes for marine engines. Again: If a casting of great strength be heated suddenly in one part, the expansion of the material, being unequal, will cause fracture.

It may be remarked that the cylinders are made of cast iron, and, in fact, may be looked upon as pipes of a large diameter in some cases, and, consequently, if cast iron is such a highly treacherous metal for bearing tensile strains, how is it that more accidents do not occur of the bursting of the cylinders? and a similar argument with respect to cannons might be put forth. To commence with, the comparison is hardly fair. The cylinder is a primary part of the engine; the pattern of the casting is the subject of careful consideration to the heads of the firm where the casting has to be made; the metal composing it is the result of careful consideration of the founder; the moulding of a cylinder is looked upon as a nice job—that is, a job requiring considerable skill; its casting is usually an event of some anxiety to all concerned, and every precaution is taken so as not to let it cool too quickly. Most cylinders are jacketted—that is, one cylinder is cast within another, to which it is attached only at points. Some cylinders are also strength-

ened by the steam and exhaust passages being cast round them, whilst all cylinders of any size are stiffened by the slide face and steam passages, as well as by the flange at the top and the bottom; also, after it is cast it has to be bored and the slide face surfaced, and this work would show whether the casting was sound or not. When the cylinder is in use it is not subjected to any severe straining actions from external causes, neither is it subjected to any great and sudden changes of temperature; so that its construction is more carefully looked after, and its usage is not of such a rough character as that of a pipe.

Now, a pipe made of cast iron is not usually looked upon as such an important affair, and, consequently, there is much greater risk of its being a defective casting, and the metal being of inferior quality. There is a chance of its being subjected to great and sudden heat, such as it would be if used as a steam pipe, and the stop-valves were to be opened suddenly; and if used as a marine engine steam pipe, there is always a likelihood of an undue strain being thrown upon it, which would not always be in the direction of its greatest strength, by the separate motions of the bodies to which it is attached. It should also be borne in mind that we are not objecting to the use of cast iron in all cases, but merely to its indiscriminate use for steam pipes for marine work.

Seeing the natures of both copper and cast iron thus stated, no unbiassed mind could hesitate one minute in forming an opinion which is the most suitable material for steam pipes for marine engines; and it is a matter of wonder that such a self-evident question should have been the subject of doubt at all. The gentlemen who survey the vessels and who, apart from their being personally responsible for the safety of the ship, have also their professional reputations at stake, would be fully justified in declining to pass a cast-iron steam pipe, merely because it was cast iron; and it may be stated further that the bare fact of a doubt having been raised at all on this subject is anything but creditable, professionally, to those engineers and manufacturers who raised it.

FILTERS FOR ASHANTEE.—The foulness of the water used for drinking purposes at most of the stations on the Gold Coast has induced the Government to decide upon sending out filtering apparatus sufficient at least for the requirements of the British troops, who, it is understood, are likely to suffer less from climate and atmosphere than from impure water. One hundred two-gallon charcoal filters have been ordered from Mr. Lipscombe, of Temple Bar, for transport to Cape Coast Castle in the steamship *Adela*.

BUOYANCY FOR SHIPS' BOATS.

SHIPOWNERS will have observed from the notices published in our columns that air space alone is in future to be deemed buoyancy for ships' life-boats. Cork puddings in canvas bags, and zinc cylinders full of pin holes, will not after the 1st of January be passed as buoyant apparatus in new or renewed boats. As regards boats carried so near funnels in steamers as to be affected by heat, iron will supersede wood in boats supplied after the 1st of January, 1874.

An important question arises as to the making and fitting of air cases for lifeboats, and we would refer our subscribers to a material of which air cases can be made. Cases made of this material, unlike cases made of copper, are absolutely valueless from a thief's point of view, so that there is no danger whatever, as in the case of valuable copper tubes, of the buoyant apparatus being stolen. The material itself is so strong that when an air case is once made, it is practically imperishable. It is also of such a nature that it can be moulded to fit any existing boat, and is so cheap, that it will cost less than efficient cork puddings. So highly is the material thought of, that the War Department have adopted it for their shot and shell, and powder cases, and also partially for pontoons, and soldiers' hats, as well, to a certain extent, we hear for harness and shoes. It is very strong, very light, very endurable, and not worth a rush for any one to steal. Captain Digby Murray and Mr. Thomas Gray, of the Board of Trade, recently designed a deck seat to be carried by ships. It is so arranged that three of them, side by side, form a useful raft. This seat can be used to save life, and it is no more incumbrance to a deck than an ordinary deck seat. Three of them have been made for the volunteer brigade at Tynemouth, and in looking about for a light and strong material, they selected Clarkson's. The result of experiments is as follows; but although in this case the material has been used wholly in the construction of the seats or raft, it is in the direction of inexpensive air tight compartments for existing boats that the material is likely to be of the greatest use to our Mercantile Marine. The seats are not patented or secured to the designers in any way, and anyone is therefore at liberty to copy or vary them. They can be seen at the house of the Tynemouth Volunteer Life Brigade. We believe that, with that desire to improve fittings which has always characterized Messrs. Harland and Woolf, of Belfast, they are about to make some of these seats for ships they are building. Experiments above referred to:—

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had a very light and easy-going appearance, the raft, which was very buoyant, floating over the waves with great facility. After being tried for a short time, the apparatus was again brought to the shore, when nearly forty persons went out in her, and with these she went almost as in the first instance."

COASTING TRADE OF CANADA.

By William Smith, Esq., Deputy Minister of Marine, Canada.

Not long ago a letter appeared in the columns of the *Shipping and Mercantile Gazette* asking if there were "any regulations existing prohibiting ships (German ships for instance) from taking cargoes in the Canada coasting trade, say Picton to Quebec (coals); and if such be the case, what is the Act of Parliament authorising such a regulation?" In reply to that letter, an editorial appeared in the *Gazette*, giving a very fair and correct explanation of the law relating to the coasting trade in Canada as it stood up to the year 1869; but the editor of that usually well informed journal appears to have entirely overlooked both Imperial and Canadian legislation on the subject since that period. Such an omission is the more remarkable, as it is generally conceded that the best authority on all maritime affairs in the British Dominions is to be found in that paper. The editor seems to assume that Sections 163 and 328 of the Imperial Customs Consolidation Act, 16 and 17 Vic. cap. 107, still remain in force, which exclude foreign vessels from the coasting trade of any colony until the Legislature of such colony should ask it to be thrown open by an address to Her Majesty. But the fact is, that the Imperial Merchant Shipping (Colonial) Act of 1869, cap. 11 of 32 Vic., repealed these sections, and conferred on the Colonial Legislatures, subject to certain provisos, power to regulate the coasting trade of the respective possessions by Local Act or Ordinance.

At the time the Imperial Act of 1869 was passed, the British Board of Trade issued a memorandum to the different colonies through the proper channel, stating, *inter alia*, that very few of the colonies had availed themselves of the powers vested in their Legislatures by the Customs Consolidation Act of 1853, and that among a great majority of them no steps had been taken to assimilate foreign and British shipping in their coasting trade; and the Board was of opinion that in some cases this inaction was due to a misunderstanding of the intention of the objects of the Imperial Legislature in retaining Section 163 of the Act 1853; therefore, to remove all doubts as to the policy of the British Parliament, and so far as Imperial legislation was concerned, all obstacles to the

equal admission of foreign ships to the colonial coasting trade, were removed by the Imperial Act of 1869.

With reference to the statement of "inaction due to a misunderstanding," on the part of either the Government or public men, such is not in accordance with the facts, the subject having been discussed from time to time for the last twenty years; and it has been generally felt throughout these colonies that while the British Government freely and liberally gave up their carrying trade to the competition of foreign shipping, and the vessels of the United States availed themselves of this privilege, still there was no reciprocity of feeling or action on the part of the United States Government in this matter, and not only have British and all other foreign shipping been vigorously excluded from their coasting trade, from Maine to Texas, a distance of upwards of 2,000 miles, but, by a forced construction of their law, they decided that a voyage from New York to San Francisco round Cape Horn, a distance of 15,000 miles, was deemed by their Government to be a coasting voyage, and that, therefore, a British ship could not carry a cargo between those places, although for twenty years their vessels had enjoyed the privilege of carrying cargoes between every part of the British Empire, except from one part of a British colony to another part of the same colony.

Previous to the Confederation of British America in 1868, the coasting trade between one colony and another, in North America, was open to foreign shipping; but, subsequently, when Nova Scotia, New Brunswick, Quebec, and Ontario became one, foreign vessels could not carry cargoes, as formerly, between any of these colonies, and, therefore, were prohibited from participating in the transport of coal, flour, lumber, and other freight between ports in Nova Scotia and New Brunswick, and ports in Quebec and Ontario.

The Imperial Act of 1869 would have opened the coasting trade to foreign vessels of all countries subsequent to that year, had not the Canadian Parliament taken action in the matter. But as soon as the Act became known here, the subject was at once brought under the notice of Government by the Minister of Marine, with a view to prevent foreigners from participating in the Canadian coasting trade until the necessary arrangements were agreed upon to allow Canadian vessels to enjoy the same advantages, and to participate in the coasting trade of those respective foreign countries.

The result of this was that a Bill, prepared by the Department of Marine during the session of 1870, was submitted to and passed by the Canadian Legislature, which provided for the exclusion of foreign vessels from the coasting trade of this country, but at the same time giving the Governor-General in Council power, from time to time, to

declare that the provisions of that Act should not apply to the ships or vessels of any foreign country in which British ships are admitted to participate in its coasting trade. Thus it is plainly evident that whilst the Parliament of Canada is naturally desirous to treat the shipping of all foreign countries in the most liberal manner, and allow them to share in its coasting trade, such a compact must be made upon the principle of reciprocity, but not of that kind by which, some twenty years ago, under the Imperial Act, vessels of the United States and other foreign countries were allowed the right of registry here, while no such privilege was extended, or ever has been, to Canadian vessels in United States ports of registry.

The editor of the *Shipping and Mercantile Gazette*, in the editorial before alluded to, states that "the opening of the coasting trade of the North American colonies would remove what may be regarded as the substantive difficulty in the way of the opening of the American coasting trade;" and that "so long as the Americans can point to the exclusion of the foreign flag from the coasting trade of our Provinces, they are furnished with an argument against the opening of the coasting trade of the Union, which it is difficult to answer." Had the writer of the above quotation thoroughly understood the question he would scarcely have written in such a strain; for what effect would the opening of our ports of registry to American shipping have in inducing them to open their ports to us? None whatever. And so it would be with the opening of our coasting trade. Were this thrown open to them, without any restrictions or conditions whatever, they would in all probability do what was done before—take all, and give back nothing in return; but the law, as it now stands in the Canadian Statutes is as liberal as it can possibly be. The true policy of the Canadian Government at present should be to retain all the privileges which it now possesses, until fresh negotiations take place for new trade relations between Canada and the United States, when the opening of the coasting trade of the Dominion to United States shipping can be included in any arrangements which may be made, if the Canadian Government should then be of opinion that it would be advisable and in the interests of the country to do so. The instant the United States make the necessary arrangements to open their coasting trade to Canadian vessels, the same trade of the whole of our country will be thrown open to them, for this can be done by the Governor in Council, at any moment, without any further legislation whatever, the only requisite necessary, being satisfactory evidence to the Canadian Government that the foreign country wishing to share in our coasting trade, has placed our vessels on the same favourable footing in their country.

Not long ago application was made to the Canadian Government to

admit Italian vessels to the coasting trade of this country, and the necessary steps were taken to throw open the same to them as soon as it was shown that our vessels were allowed such privileges in Italy. The British Government took the necessary steps to bring the question before the Italian Government, and the Foreign Minister of that country forthwith addressed the British Minister at Rome on the subject, informing him that, "under the law of 1855, still in force, the King's Government is authorized to permit the ships of foreign countries to trade on the coasts of the Royal States, on condition of perfect reciprocity.

"In the 8th article of the Treaty of Commerce and Navigation between Italy and Great Britain, signed on the 6th August, 1863, a reciprocal permission to carry on coasting trade, or 'cabotage,' was stipulated in principle, but an exception was made for the British colonies, and a special permission from Her Majesty the Queen, to admit foreign ships to this trade was required on their behalf. In virtue, however, of the dispositions in the second paragraph of the 8th article of the Treaty above referred to, and the proscriptions of the law of April 9th, 1855, Canadian vessels will at once be admitted to the coasting trade of Italy, so soon as it is shown that our vessels enjoy the same privilege in Canda."

There is no doubt, therefore, that, in a very short time, the coasting trade of both Canada and Italy will be thrown open to the vessels of these countries respectively; and it is plainly evident that the Canadian coasting laws are quite liberal enough for all purposes required to the shipping of any foreign nation; and there does not appear, at present, to be any necessity for making them any more liberal to the shipping of our neighbours, until they have shown some disposition to treat our shipping with some degree of reciprocity in the matter of the coasting trade.

Ottawa, 12th September, 1873.

MARRIAGES ON BOARD HER MAJESTY'S SHIPS.—The following important circular has recently been issued from the Admiralty:—"Several instances having recently occurred of marriages having being performed on board Her Majesty's ships on foreign stations by the Commanding Officer, no chaplain or consul being in the neighbourhood, the Lords Commissioners of the Admiralty referred the question of the validity of such marriages to the law officers of the Crown. As the law officers have given their opinion that marriages solemnised under the circumstances stated above are not valid, their lordships are pleased to direct that no marriage shall in future be solemnised on board one of Her Majesty's ships by the commanding officer."

AN IMPROVED SEXTANT.

A PAPER was read, at the British Association in Section A, by Captain J. E. Davis, R.N., on "An Improvement in the Sextant." Captain Davis described this invention as a small adaptation intended to facilitate taking observations of heavenly bodies, with a view to fixing positions, rating chronometers, &c.

It consists of two parts—viz., the micrometer and the indicator. The micrometer is a toothed wheel attached to the tangent screw, while to the moveable arm of the sextant is attached a pall, or click, adapted to the toothed wheel; each tooth represents one-tenth of the circumference, or turn of the tangent screw, so that whatever alteration one turn of the tangent screw makes in the reading of the arc, each click represents one-tenth of that movement.

The indicators are two moveable brass slides, one placed before the arm, the other behind it, and both capable of being clamped firmly.

By means of the micrometer and the indicator there is no necessity to read off at the time of observing, and one reading suffices for the set of observations.

In using the sextant, if the heavenly body is rising, the indicator behind the arm is moved with the arm in bringing the reflected image down, and before coming in contact either with the horizon or with its own reflection in the artificial horizon, the arm is clamped and the indicator also, the first contact is the first observation; the tangent screw is then quickly turned one or two clicks, as desirable, which opens or separates the two images, which on coming in contact again is the second observation, and so on. The moveable arm being brought to touch the indicator, the first observation is then read off, and the measure of quantity corresponding to each tooth in the wheel being known, all the observations are known.

Captain Davis claimed for the invention:—

1. Simplicity in the mode of observing. If a child, or a person unacquainted with the use of the transit instrument, was told to call "stop," as a star successfully passed the wires, his observation would be almost as perfect as the practical astronomer; therefore, observations can be more perfectly made with a sextant by allowing the objects to come in contact, noting the moment of contact, than by bringing them into contact and noting that time. Thus, the observations of the traveller, inexperienced in the use of the instrument, will prove of more value by this mode of observing than by that usually followed.

2. In star observations, the physical difficulty, caused by suddenly contracting and dilating the pupil of the eye for the purpose of excluding

or taking in rays of light, is avoided. If circum-meridian altitudes are being observed, all the altitudes, before and after crossing the meridian, are equal.

3. Two sets of star observations can be made by the same sextant without reading off, provided their altitudes are not the same.

4. In equal altitudes of the sun, before and after noon, for time, the sextant may be left until the last observation taken comes on in p.m., and the altitudes respectively worked back to the first of the forenoon.

5. In lunar observations at sea, when once the sexant is on the proper angle, and the objects in contact, a number of distances can be taken without removing the sextant from the eye.

6. In thick or cloudy, or even rainy weather, when an observation can only be had for a brief period, the observer can take several observations in less time than one or two by the ordinary process.

7. The measures of arc all being equal, an error in time is at once detected.

8. In nautical surveying, the indicator attached to the ordinary sounding quintant will enable the two angles required for fixing a position to be obtained without removing the sextant from the eye.

OUR GREAT PORTS.

Swansea.

Few towns can boast of so many appellations as the one under notice. It is said originally to have been termed *Caer-Wyr*, meaning the Fortress of Gower. It is so called by Lewis Glyn Cothi, a Welsh poet of the fifteenth century. The Welsh people have for centuries known it by the name of *Abertawe*, from its position at the mouth of the river *Tawe*. It is, however, more generally known by its Saxon name, which has suffered more modification in its orthography than the others. Antiquarians differ as to the derivation. Camden states that it was derived "from the number of porpoises then frequenting the bay, as if Swein or Swine sea." Another authority, John Jones, Esq., LL.D., in his "History of Wales," states that Glamorgan derives its name from the Welsh *Morganwg*, which signifies the White Sea personified, and is correctly expressed by the word "Swansea." Yet another authority states that "Its true derivation is from *Sweyne*, a Danish pirate, who infested these coasts, and *eye*, an inlet, Sweyne's inlet, as the early mode of writing the word clearly proves." Giraldus Cambrensis, writing in

1188, calls it *Sweynsei*. In the charter of Henry III., dated 1234, it is called "Sweinesheie;" and in various charters and other public documents, from 1278 down to 1738, it is spelled in nine different ways, varying slightly from the above. It was first spelled Swansea on the 3rd December, 1738, in the corporation books, and has so continued to the present time.

Not only can Swansea boast of a number of titles, but she has, perhaps, had more charters granted to her than any other town in the kingdom. Some of them are a little curious in their terms: and one of them (that of Oliver Cromwell) excessively long. The first said to be granted is that of John. It is called the "Charter of Creation;" and a copy only exists in the charter rolls of the Tower. From its loss, Swansea has been called a borough by prescription. By the way, in this charter, another variation of the mode in which the name of the place has been spelled appears. It is there called *Sweynelhe*. In the early part of King John's reign a certain William de Breos assumed a sovereign jurisdiction over Gower, and the above charter was, no doubt, granted to the burgesses of Swansea to trade beyond the limits of the seigniory. The fact of an original charter having been granted is referred to in one granted by the grandson of the William de Breos, above-named. The terms of the copy in the rolls are identical with those used in the Charter of Confirmation given by Henry III. This is referred to because some doubt has been raised as to whether the record in the Tower is the one relating to Swansea or not. Be this as it may, there are enough of others for, in addition to those of John, and Henry, and William de Breos, there are others granted by Edward I. and Edward II., in early times, and besides that of Oliver Cromwell, at a later period, there was one given by James II., making nine in all, granted to the town and the peninsula of Gower.

There are a few salient points in the general history of the place worth noticing. Numbers of Roman coins have been found in the neighbourhood, indicating the presence of the conquerors of the ancient world in that quarter. These pieces bear the features of Caracalla and others, such as Gallienus, A.D. 253; Victorinus, A.D. 265; Marius, A.D. 267; Tetricus, sen., A.D. 267; Claudius Gothicus, A.D. 268; Quintillus, A.D. 270; Aurelianus, A.D. 270, &c. Some were found at the Gwindy, in Llansamlet, not far from Swansea, an account of which is given in the first volume of the *Numismatic Journal* where, it is stated, that the place cannot be far from the line of the Via Julia, the great Roman road of the west. Others have been found at Port Tennant, on the opposite side of the river from Swansea. Of the first-named emperor it has been asserted by Dr. Stukley that he was a Welshman, born at St. David's, in Pembrokeshire; and to those who can admit this argument in regard to the usurper, the point must be doubly interesting, if natives of Wales. The castle at

Swansea is said to have been built in 1099, by Henry Beauchamp, Earl of Warwick, who garrisoned it with Englishmen and Flemings. It has seen many vicissitudes. In the time of Edward IV. it was conveyed by marriage to Sir Charles Somerset, ancestor of the present Duke of Beaufort, in whose possession it now remains, although sadly dismantled and curtailed. It was frequently taken and retaken during the civil wars, and in 1646 was ordered to be "disgarrisoned and slighted;" but General Laugharne took and strengthened it. He was, however, defeated at St. Fagans, near Cardiff, in 1648, by Oliver Cromwell, who marched on Swansea, and took its castle. The place was the scene of much bloodshed and strife from the earliest times of which any authentic record remains. When Jestyn ap Gwrgan, Prince of Glamorgan, invited the Normans to co-operate with him against Rhys ap Tewdr, the Prince of Carmarthen, and the forces of the latter were defeated, many of them, including his son Conan, were drowned, during their flight, in the lake of Cremlyn, which then existed between Swansea and Neath. The castle, of course, became a sort of key to the English possessions in South Wales at that time. Its position and its wealth, for the people soon became numerous there, owing to the feudal privileges conferred upon them, made it an object of great interest to both the invaders and the natives. In 1113 it was attacked by Rhys ap Gmfyld, who could not reduce the castle, but burnt the town. Early in the next century it was destroyed as a fortress, by Rhys ap Vychan and Llewellyn ap Torwerth, who also razed all the strongholds of the Normans in Gower. Regarding the devastations which were, from time to time, caused by such continuous strife, a Welsh writer states: "In Swansea, that peaceless town, the towers are rent, and now peace prevails there; in strongly-fortified Swansea, the key of England, all the women are widows." Such a description is only to be matched, in British history, with the battle of Flodden, in Northumberland, where so many Scotsmen were slain, that nearly the whole nobility were destroyed, and the mourning was all but universal throughout Scotland. Like the phœnix, however, Swansea seems to have soon risen from its ashes, for, in 1260, it was again attacked, and once more reduced to ruins, by Llewellyn ap Gruffyd, the last Prince of North Wales. It lay in its ruins till restored by Henry Gower, Bishop of St. Davids, who flourished in the fourteenth century. He appears to have been a man of enlightened mind. Besides raising several other buildings, mostly of an ecclesiastical character, he erected and endowed a hospital and school at Swansea. After his demise the castle at Swansea became neglected, and went to decay. In the reign of Henry IV. the town suffered severely from the strife occasioned by the rising headed by the famous Owen Glendower. Some time after that the coast around was visited by great accumulations of sea sand—the same

as occurred on the Cornish coast. The sandhills and drift arose so high, in 1478, that a tenement was destroyed by them. Again, in 1606-7, the "Great Flood" in the Bristol Channel occurred, which, however, did not occasion so much damage there as at other towns higher up the coast. Notwithstanding all these calamities of war and convulsions of nature the town seemed to progress in material and intellectual affairs. A code of laws, the oldest extant there, was drawn up in 1553. Great foresight seems to have been used in its preparation, and an advance upon many communities displayed in what is so necessary to the physical well-being of a township. For instance, in sanitary matters, it contains a few regulations which, if carefully followed out, might have saved many of the towns in this kingdom from those disastrous epidemics which so decimated the populations during the centuries gone by. Amongst others it was enacted, that no clothes, skins, or inwards of "bestes" should be cleaned at the town well, where people "feche water to dight their mete," and that no "donge" or "fielthe" be thrown on the street. The copy of 1569 renews these, and further prohibits the "keeping of unlawfull games, quenes, harlottes, vacabondes, or ydle persones in the houses of the burgesses or householders;" and, also, that no "strandge shyppe" be boarded without licence from the "portref." In 1584 a species of "Bill of Rights" was declared to by the corporate body, which ran in this way:—"Furst we do present that the Towne of Swanzey ys a Borough and a Towne of Libertie, and hath a Court therein holden every fortnight, and hath the tryall and determination of all axions and plees, the tryall of lands and lyffe only excepted," &c. A number of other "items" are declared to, such as the keeping of fairs and markets; the holding of inquests and the regulation of the limits and "liberties" of the borough; and, finally—"Item we do present that all the wrackes of the see and felons' goods within the Liberties of this Towne do appertaine unto the Lord of this Towne." The sports of the people do not seem to have been neglected, for it is found that, up to 1769, a "bull-ring" was kept up by the corporation, and every butcher who did not have his bull baited before slaughtering him was liable to a fine of one shilling, or up to three shillings and fourpence, according to the size of the animal. However barbarous such a custom there can be little doubt that the good people who framed such a law saw clearly that the public require recreation and amusement, and that if the tendency be not directed it may get to be misdirected. It is a subject for inquiry, whether the neglect of recreative sports in public is not a negative cause of the great increase of drunkenness in the land. A curious entry appears in the corporation records, in regard to this bull-baiting business, and others which show the temper of the times. In the year's account, ending Michaelmas, 1656, 8s. 4d. was

paid for mending the bull's collar; "John Mogford, for setting saile on the Sabbath-day out of this harbour," was fined 5s., by order of the mayor; 7s. 6d. was paid for repairing the "cocking stool." It seems, therefore, that the Puritans of Swansea approved of the barbarity of the bull-fight, and of a merciless mode of punishing scolding wives; but to sail on Sunday was worthy of punishment.

Regarding the commercial progress of Swansea, it may be said of it, as it has been said of the general commerce of this country by no less an authority than the Premier, that within the last century more has been done than in all the centuries preceding it. Not one hundred years ago a singular incident occurred there illustrative of the obstructive notions existing against the development of business by improved methods. The first great coalowner who used waggons for the transport of coal from the pits, instead of the old-fashioned style of mules and packhorses, and panniers, was threatened by the people because, they alleged, that the jolting of his carts through the streets caused the beer in their cellars to turn sour. There is little question that the system of trading was pretty well understood there at a very early period. The introduction of the Flemish element at Gower in the eleventh century would have an effect of that kind very soon. They were people who were noted at that period even for their commercial propensities. And although they were ostensibly established there for fighting purposes, the opportunity would not be let slip to open a trade in wool, &c. It appears certain that so early as 1305 the art of shipbuilding was well known at this town; for in the charter of William de Breos, of that date, it is expressly stipulated that he would grant "reasonable estovers" in the woods and forests to be taken for building and repairing of ships and boats by the burgesses of Swansea. "And they may make and have, if they will, out of the woods aforesaid, four great ships or less at the same time, and by succession, but we grant to them that they may out of the said woods make as many small vessels as they will, able to carry twenty hogsheads of wine or less, paying to us and our heirs for every ship or vessel newly made 12d." The sale of such to a stranger was, however, restricted, except in case of necessity at a foreign port. It appears, too, by this remarkable document that "pit coal," or "Ballywasta," was allowed to be dug for "necessaries, so long as it was not sold to any foreigner." They were a little more careful of that article then than now. It is generally supposed that there was an old colliery at Kilvay, on the opposite part of the river to Swansea, in times long gone by. The terms of the account of the jointure of Elizabeth, widow of Thomas de Moubray, Duke of Norfolk, found amongst the escheats of the third year of Henry VI., in the *Calendarium Inquisitionem Post Mortem*, Vol. iv., confirms this. One item runs thus:—*Kilney vel Kilvey tertia pars terr' et domin'*

et minæ carbonum, &c." Swansea may, therefore, claim almost as early an interest in coal mining as Newcastle-upon-Tyne itself. It was about the fifteenth century that the origin of "smelting" took place—the development of which, in various branches, has made the town at the mouth of the Tawe to have a strong claim to be considered the metallurgical capital of Great Britain. In the corporation chest there is, in one of the accounts, dated 1479, mention made of a "smelting house," near the castle, but then unproductive. This must have been one of the earliest of its kind, for it is found that about a century and a half subsequent, James I. granted his patent to Lord Dudley for his invention of melting iron and making it into "caste workes or barres, with sea coales or pitt-coales in furnaces with bellowes of as good condicon as had bene heretofore made of charcoale—a worke and invencon not formerly performed by any within this our kingdom of England." The wars and disasters which befell the place did not prevent it making sure advances when opportunity offered in the piping times of peace, along the highway of business. The charter of Cromwell attests the advantages it possessed to do so, by being convenient for shipping, and resisting "forraigne" invasions. It was this situation, "convenient for shipping," which first led to its adoption as a site for copper smelting, coupled, no doubt, with the great facility it possessed of procuring coal of a peculiar quality. Accordingly, a copper works was started about the year 1690. Since then, and up to a recent period, it virtually monopolised the copper trade of the kingdom. These works have led to others—of metals, especially, which are found in conjunction with copper. Of such are silver, zinc, lead, nickel, cobalt, &c. It is not unusual for an import cargo of ore to be valued at £50,000. But, now-a-days, the copper works are extending over many lands. New works, therefore, and old ones, too, have been turned into other branches there, such as wire, tin, patent metal, brass, &c. There are, of course, other manufactories, the usual accompaniments of a seaport, such as roperies, sailmaking, shipbuilding, and repairing. The imports consist of copper and iron ores, provisions from Ireland, timber, hemp, tallow, grain, flour and the exports principally are, copper, iron, coal, culm, earthenware, &c.

The following statistics compiled from the earliest and latest published Parliamentary returns will show, in a reliable manner, the substantial progress of the port:—

The foreign trade, inwards, of ships was—

In 1847	...	...	292 vessels	...	45,423 tons.
,, 1852	...	...	342 ,,	...	49,305 ,,
,, 1862	...	...	1,857 ,,	...	243,684 ,,
,, 1872	...	...	1,602 ,,	...	296,026 ,,

The same trade, outwards, amounted to—

In 1847	... ...	533 vessels ...	58,943 tons.
,, 1852	... ...	449 ,, ...	54,598 ,,
,, 1862	... ...	2,645 ,, ...	366,586 ,,
,, 1872	... ...	2,594 ,, ...	494,634 ,,

The colonial trade, inwards, displayed the following figures :—

In 1847	... ...	88 vessels ...	15,269 tons.
,, 1852	... ...	63 ,, ...	12,720 ,,
,, 1862	... ...	116 ,, ...	15,947 ,,
,, 1872	... ...	97 ,, ...	24,612 ,,

The same trade, outwards, showed—

* In 1847	... ...	91 vessels ...	8,261 tons.
,, 1852	... ...	96 ,, ...	19,278 ,,
,, 1862	... ...	181 ,, ...	34,945 ,,
,, 1872	... ...	155 ,, ...	45,090 ,,

The coasting trade, inwards, scored—

In 1847	... ...	4,064 vessels ...	263,967 tons.
,, 1852	... ...	3,949 ,, ...	270,230 ,,
,, 1862	... ...	4,081 ,, ...	343,721 ,,
,, 1872	... ...	3,431 ,, ...	284,677 ,,

The same trade, outwards, reached—

In 1847	... ...	6,941 vessels ...	425,320 tons.
,, 1852	... ...	6,281 ,, ...	416,367 ,,
,, 1862	... ...	6,169 ,, ...	497,368 ,,
,, 1872	... ...	5,149 ,, ...	519,705 ,,

The shipping registered at the port were—

In 1831	... ...	122 vessels ...	7,772 tons.
,, 1847	... ...	185 ,, ...	19,050 ,,
,, 1852	... ...	188 ,, ...	18,594 ,,
,, 1862	... ...	161 ,, ...	21,539 ,,
,, 1872	... ...	289 ,, ...	50,820 ,,

The ships built there are but few, the yards being mostly occupied in repairing vessels. Accordingly, it is found that those constructed were only an insignificant number and tonnage in the following years :—

In 1867	... ...	1 vessel ...	13 tons.
,, 1872	... ...	2 ,, ...	470 ,,

* It is probable that the Government return is in error here, as the tonnage is more likely to be 18,261 than 8,261.

It would appear, therefore, that the art of building ships has declined since the time of William de Breos.

The Customs' duties collected were—

In 1840	£8,934
,, 1858	6,556
,, 1868	8,610
,, 1870	6,679
,, 1872	9,284

The items collected in 1870 amounted to, in detail—

For Tobacco	£211
,, Sugar	48
,, Tea	243
,, Foreign Spirits	4,886
,, Wines	1,286
,, Sundries	5
Total	£6,679

The returns of population at different periods will best show the advance of the place :—

In 1563 there were	1,260 persons.
,, 1831 ,, ...	14,931 ,,
,, 1851 ,, ...	31,461 ,,
,, 1861 ,, ...	41,606 ,,
,, 1871 ,, ...	51,720 ,,

These figures are for the borough limits; but the extent of the town will best appear from the figures of the registration district of the Superintendent Registrar :—

In 1861 there were	51,260 persons.
,, 1871 ,, ...	67,374 ,,
,, 1873 ,, ...	71,146 ,,

The amount of coals, culm, cinders, and patent fuel exported, was—

	Foreign.	Coast.	Total.
In 1862 ...	514,393 tons.	288,817 tons.	803,210 tons.
,, 1871 ...	712,465 ,,	230,903 ,,	943,368 ,,

The values of goods were—

	Imports.	Exports.
In 1872	£2,845,116	£1,512,353

The exports have increased 78 per cent. in value in five years. The quantity of copper ore and regulus imported into the United Kingdom last year was 72,435 tons, and of that Swansea took 61 per cent. The quantity of unwrought and partly wrought copper was 47,699 tons, and she absorbed nearly 14 per cent.

To improve the advantages which Nature has bestowed upon the place efforts have been made from time to time to enhance their value by the means which engineering science can give. One of the first great steps in this direction was taken when an Act was obtained to make a canal. It was obtained in 1794, and the work was completed in four years afterwards. It extends from the mouth of the Tawe up to Breconshire, and rises to an elevation of 373 feet. A shorter canal had been made in 1789, running as far as Neath. The Harbour Trust, under which the docks and harbour works are now placed, was constituted by an Act obtained in 1854. By it all previous Acts were consolidated and amended, and very considerable sums have been expended for the improvement of the accommodation for a large amount of shipping. The following summary will clearly show these conveniences, and the dates of their construction :—

Year opened.	Name.	Depth on Cill. (O.S.T.)	Breadth at Entrance.	Water Area.	Lineal Quayage.
		Ft. in.	Ft. in.	Ac. Yds.	Miles. Yds.
1851	Beaufort Dock	No gates	40 0	1 0	—
1851	North Float	23 0	56 0	11 0	1 53
1857	Ditto Extension ...	20 0	36 0	1 2420	—
1859	South Dock	24 0	60 0	13 0	1 40
1859	Ditto Basin	26 0	70 0	4 0	
1860	North Half-tide Basin	23 0	60 0	2 3630	—
	Total Docks ...			33 1210	2 93

There is also a large space, called Fabian's Bay, partly enclosed by piers, which forms an entrance, and open harbour, at the mouth of the river. It covers 55 acres, and strong opinions have been expressed, by competent men, as to the utility and desirability of forming it into a wet dock. In addition to the above detailed spaces, there are no less than six dry docks and one "gridiron" for the repairs necessary, so frequently, for shipping. The amount of money required for the construction of these works has exceeded half a million, and is secured on the dues

leviable under the Act. A recent monthly statement of account presents the following summary—

Receipts, General Harbour Estate		£3,812	15 4
Do. South Docks do.		1,126	4 1
		4,938	19 5
Expenditure General Harbour Estate	£3,196 8 8		
Do. South Docks do.	1,155 17 11		
		4,352	1 7
Surplus		£586	17 10

This seems a favourable aspect of the finances, seeing that it includes interest and all other expenses; especially, as a proposition is now before the Trust to re-borrow their capital at a lower rate, and thus save about £300 a month. Amid this prosperity, though, there is a widefelt feeling of dissatisfaction in the port with the inadequate amount of dock room to meet the largely increased wants of trade, and the still more anticipated increase of the future, when the new colleries, which are being sunk in the neighbourhood, are in full swing. Various public meetings have recently been held, and resolutions passed, expressive of the general desire for extended docks. In a local paper, the *Ferret*, of 18th September last, it is stated that most of the leading coal shipping firms expect to increase their output by 100,000 to 150,000 tons per annum in a few years. The stimulus given to the coal trade by the high prices ruling, and the consequent larger investment of capital in that line, will cause an enormous export to be added to the present one at all the coal ports in a year or two. Two of the largest coal ports in the kingdom, Sunderland and Cardiff, are worked to the extent of 40,000 tons, and 80,000 tons, to the acre, respectively. The latter has a large basin or dock nearly ready for opening, and has already decided to apply to Parliament the next ensuing session for further powers to extend the present accommodation very extensively. If this need is felt at Cardiff, it ought to be still more required at Swansea, for there the groaning port space is worked to the extent of 50,000 tons per acre per annum.

There is no other port in the kingdom, which is principally worked by dock space, where such an amount of work is done on a given space. At Liverpool the tonnage is as 27,000 to the acre, and at Belfast, where, however, the harbour space is larger than the dock space, the ratio is only 20,000 tons to the acre yearly. These figures are taken from reliable data, and the tonnages are from the Customs registers. It is therefore very clear that for the present requirements of this port something ought to be done to extend the dock room, setting aside the increment expected in the future. The form of the harbour, and the design

of the south docks, are remarkably like that of Sunderland; but, whereas, the south docks of the latter are made with a sea entrance, as well as having one from the harbour, those of Swansea have no sea entrance, and thus vessels of large draught are debarred from visiting the port. This defect should be remedied, and a lesson taken out of the book of the Northern port.

Passing from this subject, there is little more to be said, in such an article as the present one, on the town. Its situation is fine, being on the margin of a beautiful bay, and being seated on an acclivity the scene around is picturesque in the extreme. The neighbouring watering place—the Mumbles—is almost a suburb, and is much frequented for sea bathing. The buildings at Swansea are mostly modern and commodious, and some of the public ones are striking, if they cannot be called magnificent. The market place is extensive, and cost £20,000. There are various literary, educational, and religious societies, which stamp it as the leading town in Wales for intellectual growth and taste. Owing doubtless, in part, to this feature, some eminent persons have sprung from, or have resided there. Notably, among living men, is one of the ornaments of the judicial bench—Justice Grove. It was there where Richard Savage, the poet, found a last resting-place; and, of singers, famous in the present time, the greatest of modern tenors—Sims Reeves—(by the accident of his mother residing there temporarily) can claim it as a birthplace. So can another—noted in song—Miss Annie Edmonds. It was here also that the renowned Beau Nash was born in the year 1674.

Before the Reform Act, Swansea was a contributory borough to Cardiff; but then it was made a borough, having one member. Its contributories are Neath, Loughor, Aberavon, and Kenfig. It is governed by a mayor, six aldermen, and eighteen town councillors. Under that body one extensive scheme of water supply, costing £80,000, has been made, which adequately supplies the town. The seal of the corporation is indicative of the ancient date of the corporate arms. It is a castle and portcullis, banner and tower, also an eagle, or osprey, with a fish in its mouth. As another index of the old character of the place there is an old monument in one of the churches to the memory of Sir Hugh Johns, who fought for five years in the Crusades under John, Emperor of Constantinople.

There are many curious and interesting incidents in the annals of this good old town, and it is surprising that no complete and exhaustive local "History" of it has yet been compiled.

Before concluding this article, it is worthy of note that the potteries of this town have been famous in their day. Unfortunately, the manufacture has declined, and now the only trace of it is one pottery of coarse ware, situated about twelve miles distant, at Ynismeadow, up the Swansea Valley.

Earthenware works were established at Swansea, about the year 1750, and the ware produced was of much the same kind as the Staffordshire manufacture. The works became much extended in 1790 by Mr. George Haynes. He produced a superior kind of ware called "opaque china." In 1802 Mr. Lewis Weston Dillwyn (father of the present member for Swansea) purchased the works, and by the aid of his draftsman, Mr. W. W. Young, whom he instructed in enamel printing, the opaque china became remarkable for beautiful and truthful painting of birds, butterflies, flowers, and shells, drawn from nature.

Although a kind of porcelain was made there at the close of the last century, it was not till 1817 that the fine paste known as "Swansea porcelain" was produced. This was introduced in the following manner, which account is furnished by Mr. Dillwyn to the late Sir Henry De la Beche, director of the Museum of Practical Geology:—"My friend, Sir Joseph Banks, informed me that two persons, named Walker and Billingsley, had sent to Government, from a small manufactory at Nantgarw (ten or twelve miles north of Cardiff), a specimen of beautiful china, with a petition for their patronage, and that, as one of the Board of Trade, he requested me to examine and report upon the manufactory. Upon witnessing the firing of the kiln at Nantgarw, I found much reason for considering that the body used was too nearly allied to glass to bear the necessary heat, and observed that nine-tenths of the articles were either shivered, or more or less injured in shape by the firing. The parties, however, succeeded in making me believe that the defects in their porcelain arose entirely from imperfections in their small trial-kiln, and I agreed with them for a removal to the Cambrian pottery (Swansea), at which two kilns, under their direction, were prepared. While endeavouring to strengthen and improve this beautiful body, I was surprised at receiving a notice from Messrs. Flight and Barr, of Worcester, charging the parties calling themselves Walker and Billingsley, with having clandestinely left an engagement at their works, and forbidding me to employ them."

It appears that an excellent body was finally obtained at Swansea, and, as might be expected, the natural history subjects painted upon it were most carefully executed. The manufacture was not, however, long continued. Other occupations engaging the attention of Mr. Dillwyn, the manufacture of porcelain was laid aside about 1820, when the china works were discontinued, and the appliances, having been purchased by Mr. Rose, were removed to Coalport. The same gentleman also bought the works, at that time, which were situated at Nantgarw, and with the two proprietors, Walker and Billingsley, removed them to Coalport as well, thus shutting up for a time a most important manufacture in South Wales. The Nantgarw pottery was, however, again opened by Mr.

Dillwyn's draughtsman, Mr. W. W. Young; and at Swansea, the Cambrian earthenware pottery was continued by Dillwyn and Son, and by Messrs. Evans and Co., who have only within a few years back closed it, and the site is now occupied by a patent fuel works and coal wharf. The works at Nantgarw, it may be interesting to note, have not manufactured any fine ware for many years. Common brown and stoneware are still turned out there. The value of the old ware is greatly enhanced now by its scarcity.

The clays used at Swansea were those from Bideford and Poole. Cornish kaolin and china stone likewise formed part of the porcelain body; also steatite, from veins in the Serpentine of the Lizard, Cornwall, was employed in its manufacture. Flints were obtained from the ballast in the vessels trading from the chalk districts of the south and south-east of England.

Regarding marks, Mr. Dillwyn says that "the articles made at, and marked 'Swansea,' include all, I believe, which have a more compact fracture, and the addition of a trident denotes a supposed improvement which was ultimately not found to answer."

Mr. Dillwyn, in his work entitled "Contributions to a History of Swansea," published in 1840, singularly makes scarcely an allusion to the interesting facts connected with this business, and so personally connected as he was with it. At page 23, in a foot note, he merely states that the first copper work established there was about the year 1719, "erected on the site which is now occupied by the Cambrian Pottery." Showing, however, that at the time of writing (1840) it was still in existence.

There was also another pottery at Swansea for the production of earthernware belonging to a Mr. Bevan, which was closed some thirty years ago.

The rare specimens of Swansea and Nantgarw ware, which are specially valued by connoisseurs are those which were produced at the latter place between the years 1814 and 1817, and at the former place between 1817 and 1820. The finest pieces were painted by Billingsley himself, whose touch was surpassingly delicate, and whose floral decorations on the ware have stamped him as one of the first masters of the art. He was employed at Nantgarw from 1814 to 1817, when he removed to Swansea, to be employed by Mr. Dillwyn. There are plenty specimens of the ware, belonging to both places, still extant, but the elaborate productions of this artist are rarely to be met with.

THE WATER-TUBE BOILERS OF THE STEAMSHIP "MONTANA."

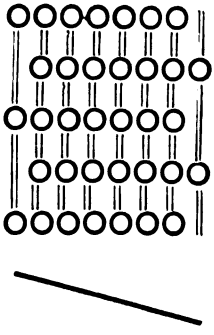
One of the most successful of our Transatlantic steamship lines is that of Messrs. Guion and Co. Beginning in 1866 with the *Manhattan* and the *Colorada*, there has been added the *Nebraska*, the *Minnesota*, the *Idahoe*, the *Wyoming*, and the *Wisconsin*, some of these having made a long run of successful voyages, perhaps greater than has been made consecutively by any steamer in any of the other lines. To the number of these steamers it was intended to have added this year the *Montana* and the *Dakota*, two steamers of the largest proportions yet employed for the American passenger trade, being each 400 ft. long, by 43 ft. 8 in. breadth of beam, and 40 ft. depth from upper deck beams to floors, with a gross register tonnage of 4,320 tons. The hull is flush plated, and is built with a tumble home of 8 ft. each side. These vessels have each three iron decks carried continuous through the bulkheads, and are of very great strength and intended for a high speed, indeed, the object of their construction has been, professedly, to produce the fastest, the strongest, and, at the same time, the most economical of ocean steamers. The whole of the designing for the hull, for the engines, and for the boilers has been in the hands of John Jordan, Esq., the company's able superintendent engineer, who is well known as having been the first chief surveyor of the Liverpool Registry of Iron Vessels, and from his connexion with several other successful marine engineering enterprises.

It is our purpose in the present notice to give a popular description of the boilers intended for these two vessels and to explain the nature of their failure. Nothing gets credit like success, but failure is sometimes the reward of as honest endeavours as any that ever were crowned with success, and the abandonment of a project, even after a mint of money has been spent upon it, is often, as we believe it has been in this case, decided by considerations altogether apart from the question of the probable ultimate success of the plan. It is with many a broken wave like this that the highest tides of engineering improvement have risen, and if we appreciate the lessons this gigantic experiment is calculated to teach us, the result will be real progress towards the solution of the practical problem of marine water-tube boiler reliability.

The rapid extension of the ocean steamship trade within the last five years has been greatly advanced by the introduction of the use of high-pressure steam by means of compound engines. The enormous strength required in the shell of a large steam boiler of the common cylindrical form for the now ordinary range of high pressures, has taxed the constructive power of manufacturers almost to the very utmost of their resources,

and when these two steamers were designed, the pressure fixed upon being 100 pounds per square inch, whereas 75 pounds was about the maximum that had been previously used on any large scale, some modification in construction was deemed advisable to secure the necessary strength along with great endurance, in respect to wear and tear. The thickness of the plates of cylindrical boilers is, for equal pressures, about in proportion to the diameter of the shell. The thickness of boiler plates having already reached $1\frac{1}{8}$ in. in several boilers, and, we believe, even $1\frac{1}{4}$ in. in some cases, the limit of the rivetting power of even our large hydraulic machines was believed to have been attained. Instead, therefore, of increasing the thickness to meet the higher pressure, the diameter was reduced, and in place of six boilers, each about $12\frac{1}{2}$ ft. in diameter, and with plates about $1\frac{3}{8}$ in. thick, the design was made out for 350 tubes, each 15 in. in diameter, and made of boiler plate $\frac{3}{8}$ in. thick, with 540 square feet of firegrate. An experimental boiler, a facsimile of a section of the boiler ultimately used, was worked for six weeks on the premises of Messrs. Palmer and Co., at Jarrow, to the perfect satisfaction of the inventor. It may be necessary here to state that Messrs. Palmer and Co. were merely the contractors for this work, and that, from the first, they gave all the opposition they could to the adoption of the design, and that they have no claim to any merit there may be in the invention, and that they are in no way responsible for the result.

The 350 tubes, each 15 ft. long by 15 in. diameter, and $\frac{3}{8}$ in. thick, were divided into ten equal parts, called ten boilers. Each of these contained 35 tubes arranged in five horizontal rows, each row containing seven tubes. The tubes lay nearly horizontal, there being only 9 in. inclination in the length, 15 ft. To make a flame way through the stack of tubes they were arranged, as shown by the following printer's diagram, close horizontally, and 12 in. apart vertically, the dark line shows the position of the fire-bars.



The tubes in the same vertical line were joined together at the ends by vertical connecting pipes, $6\frac{1}{2}$ in. diameter, so that each of the ten boilers was again subdivided into eight sections, that over the furnace mouths consisting of three tubes joined by the end vertical pipes to be 4 ft. 6 in. centre to centre. The remainder contain five tubes in each section, at 2 ft. 3 in. centres, except the one over the back end of the furnaces, which has only two tubes. Each of these tubes was, in fact, a little boiler, equal to about 8 horse-power nominal, by the Lancashire rule, 6 square ft. horizontal area per horse-power. On each of these there were two manhole doors, with crossbars and centre bolt. There were, therefore, altogether 700 manhole doors on the boilers, besides 80 feed-pipe and 70 scum-pipe and 80 steam-pipe connections. The tubes were carried on cast-iron framing below, with wrought-iron girders dividing the flameway space, and an immense number of firebricks, which altogether made up much more than would have been the weight of boilers of the ordinary type.

These ten boilers were placed back to back, five upon each side of the centre line of the ship, with two stokeholes, one in each wing, each about 80 ft. in length. There was no dividing wall between the two rows of boilers; each flame space was common to two opposite furnaces, as is generally the case in the usual form of double-ended boilers. Three super-heaters, each about 3 ft. diameter and about 30 ft. in length, are placed, two horizontally in the uptake, and one between vertically in the funnel, forming an inverted T about 65 ft. in horizontal length. One immense uptake, 80 ft. long, extended from end to end of the boilers on the top, and led into one oval funnel. The surface of this uptake, more than 1,500 square feet, made the space above the boilers, where all the steam stop-valves were placed, intolerably hot, but the stokeholes were rather cooler than with ordinary boilers.

The engines are compound, and of a novel design. There are two cranks and there are three cylinders, one the high pressure cylinder vertical, 60 in. diameter, working the pumps by levers. There are two low pressure cylinders, each 113 in. diameter, horizontal, on one crank. The stroke is 40 in. It will be noticed that the ratio between the capacities of the cylinders is much in excess of that which is followed in other compound engines, but the intention was to carry very high pressure steam. The valves for the distribution of the steam are the Corliss valves, and, we believe, the engine has given great satisfaction on the trial trips, and that its design is also the work of Mr. Jordan.

Having described the general configuration of the arrangement, we will now proceed to the performance under steam, and we will supplement our description of the details as required for explanation.

Shortly before the first trial under steam, an alteration was made in the original design with respect to a provision for heating the feed

water. The two vertical sections nearest the front were set apart as a feed-heater, the feed entering at the top; as it was expected that only heated water would leave them, an outlet for that was provided at the bottom of each, where they communicated with a large cast iron feed-chamber open to all the sections. In this feed-heater design there seems to have been two departures from orthodox practice. Feed-heaters are usually made to appropriate what would otherwise be waste heat. The temperature of the feed as it leaves the hot well being in this case about 200° lower than the temperature of the steam, the escaping gases, after being cooled as far as practicable by the steam, might be further reduced in temperature by being brought in contact with a feed-heater containing water at the initial temperature 200°. If thereby the temperature of the gases was not reduced so far as to impair the draft, the heat so abstracted would be all clear gain. But, to divide off one part of the heating surface proper, and confine that to feed-heating, is an arrangement that cannot be explained upon economical principles.

When a boiler is worked at 100 lbs. pressure, as this was intended to be, the temperature of the steam is 338° Fahr. If the feed enters at 120°, there has to be added to make of 1 lb. of water 1 lb. of steam, heat equal to what would increase the temperature of 1,094 lbs. of water 1°, or 1,094 units. Of this amount, 218 units go to increase the temperature of the feed-water from 120° to 338°—that is, to make up the increase in the *sensible* heat, the rest is the latent heat of evaporation required to change the water at 338° into steam at 338°. As 218 is about one-fifth of 1,094, it is evident that not more than one-fifth of the effective heating surface can be applied as a feed-heater, anything more than that proportion would make *steam*. But in the feed-heater arrangement just described, we have eight tubes, out of a set of thirty-five, appropriated to heat the feed. This seems to be only one tube more than the one-fifth; but it will be noticed that the feed-heater is in two sections, one containing three tubes, and the other containing five tubes. The feed connection was of the same size to both sections, and it might therefore be expected that one-half of the feed would enter by the three-tube section, and one-half by the five-tube section. But according to the calculation indicated above, the utmost feed-heating possible for one-half of the feed would be the half of one-fifth, or one-tenth of the total heating surface, or three and a half tubes instead of five tubes, as in one of the feed-heating sections. There are other considerations arising out of the formation of steam in the feed-heater that would tend to the greater part of the feed passing through the three-tube section; but these need not be pursued further, as the above excess of heating surface, even with an equal distribution of the feed, is sufficient to account for the absence of water in the five-tube section, which led to the first failures of tubes under

steam. A small pipe, only $\frac{7}{8}$ in. diameter, connected the feed-pipe at the top of these feed-heater sections to the steam pipe, and it was only by this small outlet that any steam formed in the feed-heater tubes could escape, unless by forcing the water out of the lower tubes, and then passing off by the bottom connection, which was $2\frac{1}{2}$ in. diameter.

On the 11th June, at 5.30 p.m., the *Montana* left Tynemouth, for Liverpool. As this was the first trial under way, it was arranged that the engines should not be worked at more than 44 revolutions until the morning. At 6.30 a.m., on the 12th, that is, after being under way, but not at full speed, for only thirteen hours, the lower tube in the five-tube section of one of the feed-heaters burst, scalding one fireman, and frightening all the others. The rupture was longitudinal, and extended more than 2 ft. in length, and the plate at one side opened out, but fortunately with the lips of the opening directed towards the uptake.

At 3 p.m., on the same day, another tube gave out in a similar portion, in another boiler, but with the crack athwart the tube.

At 5.30 p.m., got under way again, with steam at 50 lbs., and the engines making 40 revolutions, the two boilers shut off, and keeping the fires well away from the feed-heater tubes.

At 8 p.m., had shut off the damaged sections of the two boilers, and had got steam up in these boilers.

At 10.20 p.m., a third tube gave out, cracked across.

At 10.30 p.m., a fourth tube gave out, cracked across.

June 13th, 7.30 a.m., a fifth tube gave out, cracked across.

The vessel had been now only thirty-eight hours under way, and five of the ten boilers had given out, all at the same place, viz., the lower tube of the five-tube feed-heater section, and the failure of the others was expected, it was decided to make for Portsmouth, after having shut off the damaged row of tubes in these five boilers. Arrived at Portsmouth at 5 p.m., on the 13th.

At Portsmouth the damaged tubes were repaired, and the five-tube feed-heater sections was connected to the boiler proper, leaving only one section, viz., that with three tubes as feed-heater.

Left Portsmouth at 7.30 p.m., on the 18th, and arrived off the Mersey on the 20th, at 2.20 p.m.

From Portsmouth to Liverpool everything seemed to work satisfactorily, and although the trial was but a short one, some who had entertained doubts as to the success of the plan were beginning to have more confidence in it, and all that was wanted now was a lengthened trial, such as a run to New York and back, to establish the reliability of the boilers.

At Liverpool, the boilers were thoroughly examined, the manhole doors being all removed. It was found that all except the lowest row of tubes

were perfectly clean inside. The tubes rest upon four brick walls, containing the cast-iron framing, which divide each boiler into four furnaces, and over each of these walls in the bottom tubes there was a deposit of dirt, rust, waste, and such scraps incident to new boilers. These were thoroughly cleaned before getting up steam again.

On the 26th August the *Montana* left Liverpool, at 1.15 p.m., to have a six days' trial, under steam, for the satisfaction of the Board of Trade, whose surveyor at Newcastle, Mr. Parker, had refused a passenger certificate for the vessel until a proper trial of the boilers at sea had been made. Mr. Parker came round with the steamer from Newcastle, and accompanied her again on her final trip. Captain Grant, R.N., from the Admiralty, and Captain Forster, R.N., chief emigration officer at London, went on the trial, to report on the performance of the vessel, and Mr. Brooker, chief engineer, from the Admiralty, and Mr. Carlisle, another Board of Trade surveyor, also went officially, to report on the performance of the engines and boilers.

Our readers will perhaps remember that we had a severe gale on the 27th and 28th. The *Montana* was in the worst of it, about 200 miles west of the Fastnett, and behaved admirably as a sea boat.

The boilers went on all well until at 3 a.m., on the 28th, the bottom tube, fourth from the front in one of the boilers, cracked in the same manner as those in the feed-heater section had done in the previous trial. The crack went round the tube at what was supposed to be the weld. The weather was so bad, and the tubes so unreliable, that it was determined by Mr. Jordan to put the vessel about at daylight, and return to Liverpool, he having then decided that the boilers would not do. The vessel had been out only thirty-eight hours, the same length of time that elapsed before deciding to run for Portsmouth on the first trial.

The vessel arrived in the Mersey on the 29th, at 2 p.m. The same night, while the vessel was lying at anchor, another tube cracked, this time longitudinally, as the first one on the former trial had done. All the others having cracked athwart the tube where the weld had been, the tubes being made in two lengths, and welded together in the centre.

The owners of the *Montana*, without waiting for the reports of the officers who had gone on the trial, decided to remove the boilers, and to replace them by common cylindrical boilers. They at the same time decided to treat the sister ship, the *Dakota*, in the same way, although the water-tube boilers had been made for her also, to condemn them without a trial.

The responsibility resting upon the Board of Trade, in connection with these two steamers, has been of a most critical nature. All through the construction of the steamers, the Board's officers took careful note of

every departure from established engineering practice, but they would not commit themselves to approve of any of the novelties introduced without the test of experiment. So important did the question appear, that they from time to time sent special inspectors to Jarrow to report independently on the seaworthiness of the boilers. These reports all agreed in condemning the plan, and they even described the points in which the boilers would fail with almost as much precision as has been done in this description. The Board of Trade, although they have, with good reason, confidence in the opinions of their own officers, always give free scope to those who differ from them to prove their plans, but not under a passenger certificate. In this case, the owners were very urgent that that rule should be departed from; but their representations were of on avail, and the propriety of the Board's decision is eminently justified by the result; that which they blamed the Board for objecting to before it was tried, was condemned by themselves on the above very short trial, and without waiting for the Board's decision.

We have explained the cause of the failure of the feed-heater tubes in the first trip; we have now to explain the cause of failure in the final experiment. We have explained that each boiler contained six vertical sections with five tubes in each, one vertical section with two tubes, and one vertical section with three tubes; the last being a feed-heater. A large feed-pipe of cast-iron ran across the breadth of the boiler, a little below the low end of the lowest tubes; each of the sections communicated with this pipe by an open pipe $2\frac{1}{2}$ in. in diameter. On the top, at the high end, a smaller pipe for steam ran across the whole breadth of the boiler, and communicated with each section by an open pipe $2\frac{1}{2}$ in. diameter. The glass water-guage connection was made to this cross steam-pipe above, and to the large cross feed-pipe below, and whatever the level of the water showed in the glass to balance the pressure in the steam-pipe and the pressure in the feed-pipe, was to be understood to be the measure of the height of the water in all the sections. The connecting to the steam-pipe and to the feed-pipe was a good way of *not showing* how the water level stood in the different sections. We have said that each of those tubes would count about 8 horse-power, nominal—let us say $2\frac{1}{2}$ horse-power for each—each five-tube section would be a 12 horse-power boiler. The back section would be a 5 horse-power boiler. We have then, instead of one boiler of thirty-five tubes, to consider a range of six boilers, each 12 horse-power, nominal, and one of 5 horse-power, each fed by its own feed-pipe branch at the bottom, $2\frac{1}{2}$ in. diameter, all connected to one main feed-chamber, and each of these boilers having as their only communication above, a 2-in. steam-pipe branch from each. We are next to realize that these boilers are to be worked with one water-gauge connected to the steam-pipe above and to the feed-

chamber below. There are no regulating valves whatever to direct more feed to go into those sections which make most steam, or to give freer escape to the steam from those sections. How would this work? Evidently that section which made most steam would require most water, but the very fact of there being most steam made in it would cause the pressure of the steam to be higher in that section than in the others, and would blow the water out, making the water level lowest in that section which had the best heating surface. The water level, when the fires were active, would not be even approximately at the same height in all the sections.

In the United States Act of Congress relating to steamvessels, approved February 28, 1871, there is a provision that corroborates in a remarkable manner the explanation we have given above. Chapter C., Section 39, contains the following:—"And when boilers are so arranged on a steamer that there is employed a water-connecting pipe through which the water may pass from one boiler to another, there shall also be provided a similar steam connection, having an area of opening into each boiler of at least one square inch for every two square feet of effective heating surface contained in any one of the boilers so connected, half the flue and all other fire surfaces being computed as effective." Now, in each of these tubes we have *at least* 20 square feet of effective heating surface, or 100 square feet in each of the five-tube sections, and, according to the above regulation, there should be a steam connection to each, equal to 50 square inches in area, or an 8-inch pipe to each. But the pipe is only 2 in. in diameter, or only *one-sixteenth* part of the area required by the above regulation, and the sections are all open to each other by 2½ in. clear openings at the bottom of each.

The mistake seemed, in the opinion of the officers of the Board of Trade, to hinge on this arrangement of feed. If, instead of having the different sections all open to each other at the bottom, they had been open to each other only at the second tube from the top, then, whatever might have been the irregularity in the evaporative capacities in the different sections, it would have been impossible to drive the water level below this communication so long as a supply of feed was maintained.

The boilers of the *Montana* might have been easily altered in this respect. The bottom connections would have had to be shut off, and a new connection made at the level of the uppermost row of vertical neck pieces at the low end of the tubes, that is, just below the top row of tubes. In the interest of boiler engineering science, it is a pity this was not done, as otherwise the experiment proves nothing, the result having been just that which any engineer with a critical eye would have seen to be inevitable, and what it did not require any experiment to find out. We have, however, no liking for these water-tube boilers, and we must

guard our readers against being misled by our remarks; they are not to be interpreted as at all in favour of horizontal water-tube boilers, but only as directing attention to what seems to us to have been the real cause of this failure.

Even if these tubes had stood, the alterations that would have been necessary to conform with the Merchant Shipping Act requirements for passenger steamers would have been a serious obstacle in the way of their adoption. The officers of the Board of Trade, who reported on the boilers, pointed out this evil of different water levels, and that a separate water-gauge would be required, as well as a safety-valve and a feed-valve for each section. The smallness of the steam-pipes, only 2 in. diameter from each section, conduced, in a great degree, to the existence of different water levels, and to the blowing out of the water from entire sections, and the consequent failure of the overheated tubes. These pipes were too small, even for safety-valves, by the ordinary rule, for every five-tube section corresponded to 7·7 square feet of firegrate, and if we allow, as we ought to do, for inequality in efficiency of heating surface, we should count on at least 10 square feet to each section. But for even 7·7 square feet, the safety-valve should be $2\frac{1}{4}$ in. diameter, and for a pipe leading to a steam chamber where the pressure is to be nearly that in the boiler, the area should be very much more than that required for a safety-valve. There is no doubt that this defect led to great differences in the pressures in adjacent sections, and, therefore, necessarily to a difference in water level or to the water being blown from one section into another.

The failure has been attributed to inferior workmanship. There seems to us to be no ground for such a statement. The tubes are welded tubes, welded longitudinally in two lengths, and then butt welded in the middle. The first failure and the last failure were longitudinally; the other five were athwart. As the longitudinal failures are best understood, let us arrive at what amount of workmanship inferiority would be necessary to cause the failure of the tubes, at even 100-pound pressure per square inch. The tubes are of $\frac{3}{8}$-in. plates, and if the plates were solid, would stand the pressure of $\frac{48000 \times \frac{3}{4}}{14\frac{5}{8}} = 2461$ lbs. per square inch. That is if only 4 per cent. of the section of the pipe was solid, the bursting pressure would be 100 pounds per square inch. But even the best welded plates are not supposed by engineers to have more than two-thirds of their section solid, and Fairbairn and Rankin both give the strength of a welded plate as only a little above that of a single rivetted joint. Now, in examining a broken plate, thirty-three per cent. of black looks a great deal, especially if any scarphing is in the fracture, but as that is the proportion in ordinary welding, a fracture must not be taken

as condemning the quality of the workmanship, if here and there spots of imperfect union are visible. As the factor of safety in this case, even knocking off the thirty-three per cent., is still sixteen, or double that asked in the strongest ordinary boilers, it is evident that for the welding to be blamed for the failure of the pipes, they must have been so bad as not to have been able to hold water at all.

We have in the preceding statement confined ourselves to facts which any of our readers could have procured for themselves by making enquiries amongst those who have been on board these vessels, and we have given them a place in our magazine that the lesson bought at such a cost, not less, we believe, than £60,000, may not be lost to engineers.

We have now to state, in conclusion, that the new boilers making for these steamers by Messrs. George Forrester and Co., Liverpool, for the *Montana*, and by Messrs. Palmer and Co., Jarrow, for the *Dakota*, are being pushed on to enable the steamers to be on their station early next spring. The engines in the *Montana* acted very well, and, considering the pressure carried, drove the vessel at a great speed, and as the new boilers are even of more power than those taken out, it is expected that the vessels will yet be notorious for their success.

THE EFFECTS OF UNEQUAL HEAT ON THE COMPASSES OF IRON SHIPS.

In our September number we put forward for discussion, or we ought rather because more correctly, to say, we put forward for such notice as intellectual giants in the world of science might deem it worth their while to bestow on so small an effort; a mild suggestion, whether it may not perhaps be within the range of possibility, that the effects of unequal heat on the hull of an iron ship disturbs her compasses, and whether that disturbance is thoroughly understood. We distinctly stated, as plainly as was in our power, that (in effect) we did not wish to be obtrusive, nor appear to be learned, and we put the question forwards with that modesty which a suggestion on our part, respecting such an important subject, appeared to demand. We said that if our paper should form the subject of hostile criticism the writer would be satisfied.

We have been more than satisfied, we have been gratified, for we have succeeded in calling forth a remonstrance from an authority no less exalted than Captain Evans, R.N., C.B., F.R.S., the superintendent of the Compass Department of the Admiralty of Great Britain; a gentleman

whose every word is a word of wisdom, whose means of obtaining information are boundless; and whose opportunities and intellectual power of discussing information are as boundless as his means of obtaining it. The only effort we would wish to make, by way of preface to this letter, is an apology that we, in our modest endeavours to obtain criticism, should have done anything, or tried to place anything in such a predicament, as in the words of so eminent a man of science, to be "beyond the scope of material law," and "without (*i.e.*, outside) the jurisdiction of moral law." Notwithstanding the unwitting feat we have performed as regards material and moral laws, we trust that a perusal of the following dissertation (which with that regard they have for authority our readers will accept in faith and without question) will banish all the evil effects, if any, of our September paper. Captain Evans's letter is addressed to the editor of the *Shipping Gazette*, and is as follows:—

"Sir,—An article on the 'Effects of Unequal Heat on the Compasses of Iron Ships' appeared in the *Nautical Magazine* for September, and which has just been reprinted in the columns of your widely circulated *Gazette*. As this article is calculated to excite alarm in the minds of those intrusted with the navigation of iron ships, I beg the favour of the insertion of the following comments thereon:—I would premise, that we are met in this article nearly at the outset, in reference to unsuspected causes of error in iron ships' compasses, by the following assertion:—'There is reason to believe that these so-called, and in many cases, unknown, "errors" in the compass are, in fact, more frequent than is generally suspected by mariners; and there is further reason to believe, not only that they are frequent, but that they are temporary and ever-varying.' This would appear to be written with the view to bring the security of the navigation of the iron ship within the doctrine of chance; in other words, to consider these errors as beyond the scope of material law, and their results without the jurisdiction of moral law. Whether this interpretation of the writer's words is or is not correct, he certainly puts aside the accumulated experience of the last twenty years, to say nothing of the investigations of many able men of science in this and other countries, and especially of the judicious and sound researches of the Liverpool Compass Committee, which extended over a long period of time. After a lengthened connection with the Admiralty Compass Department, and, I may add, an almost daily examination of the navigating records of our large war and transport fleet, I have never yet detected these 'frequent' errors, classed as 'temporary,' and 'ever-varying.' On the contrary, the more extended the researches, the more certain it is that the errors of iron ships' compasses are steady, uniform, and persistent in their character in every type of ship.

"Special attention is directed in this article to three alleged facts:—

One, that the deviation observed in the morning differed from that in the evening, as arising from difference of temperature. A second, that a deviation of ten degrees was observed in port, when the sun was shining brightly on one side, and the other side in shade. The third, that a change of ten degrees of deviation occurred within the hour when passing over shoal water of twenty-five to thirty fathoms; that such sudden change is common between Sable Island and Nantucket, and, by the writer, in great measure, attributed to the ship passing through alternate bands of cold and warm water. In the interests of science—which includes that of our Marine—these alleged facts should be given in more precise detail; the names of the ships, the captains and owners should all be in the possession of the public, in order that an investigation of the reported phenomena should be taken up by willing hands, competent to fulfil the task. These undigested statements alone, serve to take us back to the state of uncertainty that existed some thirty years ago, when iron ships were few in number, and our knowledge very limited.

"With reference to the experience gained in our iron war fleet—a fleet which has now traversed nearly all the navigable regions of the globe—I can affirm, after a personal examination of fully 2,000 deviation tables, to which may be added the constant consultation of the daily records of their tricks and observations, that I cannot recall to mind one particle of evidence in support of the alleged startling changes quoted in the article. It must also be remembered that our Indian transports have been running up and down the Red Sea for the last six years, and that we have numerous ships of war crossing the Gulf Stream and its neighbouring alternate bands of cold and warm water from month to month. The effects of heat, or unequal temperature, on magnet and soft iron bars are well known to magneticians. Naturally, this effect on our iron ships of war has been watched by the Admiralty Compass Department, and very extended, accurate, and delicate observations have been made to detect the issues. The effect is well observed numerically in one of the magnetic co-efficients; but as I have stated in a practical work written for the use of seaman and compass adjusters, to a degree which is unappreciable in navigation. Heat, in fact, as imparted to the hull of the ship, causes a small diminution of the directive force of the compass-needle, the errors arising from which are so small as to be masked in the errors of observation when observing the deviation even of the best compasses.

"It is unfortunate that the recent logs of the steamship *City of Washington* should have been referred to in this article. Sympathy with those who have been unfortunate is unquestionably a proper feeling, but the wreck of this ship, instead of arising from some of those chance

errors which we are now asked to recognise, may be more properly traced to well-known causes, which every seaman certainly has the opportunity of knowing, and in many cases to remedy. For an examination of these well-known causes I must refer your readers to the concluding paragraphs of the Third Report of the Liverpool Compass Committee, where a tolerably exhaustive list of those which lead iron ships (under imperfect supervision) into danger are very distinctly and graphically set forth. My own experience vouches for their accuracy.—Yours, &c., FREDK. J. EVANS, Captain R.N."

But we have a still greater treat in store for our readers. Mr. Rundell, of Liverpool, another intellectual giant in the compass world, has "answered responsive" to our innocent looking article, in which, we are pained to say, he has discovered "something to excuse the getting of a ship ashore—something to mystify the stipendiary magistrate—something to raise the sympathy of the public and to divert attention from the true cause of disaster." It is curious that our little article should by one learned gentleman be regarded as setting aside "material" and "moral" laws, and by another learned gentleman to be doing three "somethings" that are in themselves very naughty. It is also curious that the two letters should be somewhat contradictory. We really now begin to think that there may be something in the article, possibly more than we had supposed. Mr. Rundell's letter, also addressed to the *Shipping Gazette*, is as follows:—

"Sir,—I observe, by your issue of yesterday, that Captain Evans, C.B., F.R.S., &c., the chief of the Admiralty Compass Department, has written to you respecting your reprint of the article with the above title from the *Nautical Magazine* for September. In writing thus promptly to correct the bad tendency of a pernicious article, Captain Evans confers a great favour on our Mercantile Marine. He has, in this letter, anticipated to a considerable extent some remarks which I was preparing for publication; but I still hope that, on so important a subject, you will be able to find space for one, or perhaps two, other letters. As the Executive Officer of the Liverpool Compass Committee when this body was in active operation, I naturally feel that one of two things is implied by the writer of the article in question. Either he must suppose the Compass Committee had no knowledge of thermal electricity and its effect on the magnetic needle, and had thus neglected to take account of its possible influence; or that, having taken this matter into consideration, and satisfying themselves that it had no effect, iron vessels must now be subject to errors from which they were exempt eighteen years ago. To both these inferences I must strongly object. It was in consequence of my previous acquaintance with this and cognate subjects that I was appointed as secretary to the Committee, and I can now

bear testimony to the fact that suggestions of errors from unequal heat were carefully considered. Only in one or two cases did the captains of iron vessels ascribe their compass errors to this cause. Investigation showed that there was no support for the supposition; and subsequent experiment has proved that nothing appreciably affecting the navigation of a ship is possible from the effects of unequal heat on the compasses of iron vessels.

"Let us, however, for a moment examine the three examples brought forward by the *Nautical Magazine* in support of the hypothesis. No. 1. 'In an iron steamship going up the Red Sea, the master noted that the deviation in the evening was different from the deviation in the morning.' Very probably the 'difference' would have been the same in a wooden vessel. I remember that the same thing was observed on shore in Liverpool by a gentleman who wished to ascertain the exact variation of the compass. He found that the morning and evening observations did not correspond, and rightly attributed the difference to want of adjustment in his instrument. The compass in the iron ship in question, if taken ashore, would possibly have shown the same difference which it did on board. But we are not told that this was tried; or that any other compass on board showed the same peculiarity; or that it has been observed in any other steamer in the Red Sea; or whether it was large or small in amount—nothing, in fact, which one would reasonably expect in the shape of evidence to support the premises.

"Case No. 2 may be briefly stated thus:—In a steamer bound from Liverpool to New York, while running along the shoals between Georges and Nantucket, in twenty-five to thirty fathoms of water, 'an alteration' of ten degrees was observed in the compass in one hour. How this was ascertained is not stated—whether by celestial observation, or by comparison with another compass supposed to be correct, or supposed to be free from the influence which so seriously affected the one in question. So extraordinary a change might be supposed to demand immediate investigation on the part of a careful navigator, and a record of the direction of ship's head by each compass on board at the time. The record, too, would not have been complete without some notice as to whether the 'alteration' was permament, or belonged only to the special hour named, or whether 'the sun was shining' on one side of the vessel, as in the case No. 3—a vessel in which a deviation also of ten degrees was observed. In the cases No. 1 and No. 2 we can form some idea of the direction of the vessel; but in No. 3 it is not said whether she was in dock, or swinging at anchor, or whether she was lying alongside another iron vessel; whether the sun shone on her port or her starboard side; or if the deviation was easterly or westerly. The statements are meagre and vague, and, although quite true, are entirely

unfit to support the writer's position; but he appears unconscious of their baldness and imperfections, and boldly asks—'how are these errors to be accounted for?' An error very similar to cases Nos. 2 and 3 was once very satisfactorily accounted for in this way:—The door of the binnacle was opened, and, on looking inside, a magnet, originally placed horizontally, was found to have slipped from its supports, and was hanging loose at an angle of about forty-five degrees from the perpendicular. In other cases a blunt pivot, or a cracked agate, or some equally-simple mechanical cause, has accounted for the error supposed to have been due to the magnetism of the ship. But these simple causes will evidently not suit the writer of the article, for he has to support the proposition which he commences with, namely, that the compass on board iron vessels is subject to 'frequent,' to 'unknown,' to 'unsuspected,' errors of a 'temporary' and 'ever-varying' character! Evidently something sensational is wanted—something to excuse getting a ship ashore—something to mystify the stipendiary magistrate and puzzle the kind-hearted seamen who assist him on a Board of Trade inquiry—something to raise the sympathy of the public and to divert attention from the true cause of the disaster.

"It is, I think, plain that the writer, besides offering imperfect evidence, carries his theory too far, for, after reading his paper, the real puzzle appears to be, not to account for one steamer getting ashore, but to account for the 700 steam voyages which are yearly performed between Liverpool and New York without accident, and without, so far as I am advised, ever noticing any change of deviation in the compass when passing into or out of those bands of cold and warm water which are always met with on this voyage.

"There are other parts of the article in question which are equally obnoxious to comment. Perhaps you will favour me with space for some further remarks upon them in another letter.—Yours, &c., W. W. Rundell, Liverpool, October 3rd. 1873."

After reading the above communications, our readers will perhaps expect us to own that we are ashamed of ourselves; but our readers will be disappointed if they expect anything of the sort. We stand our ground, and say now what we said before; viz., that the subject is worth inquiry. We may be wrong, but, whilst we admit that the world owes more than it can repay to the two gentlemen who are so tremendously shocked by our heterodoxy, we do not admit that these two gentlemen, great and undoubted as are their powers and services, have yet unveiled the whole truth; nor do we admit, as their letters imply, that October, 1873, marks the end of all acquisition of knowledge of compass deviation. Finally, we say that the deviation of the compasses of iron steamers in the American trade is well worthy of early attention and investigation;

and that there is no difficulty, if there should be any desire, to obtain the data from the logs of large companies in the trade. Let Captain Evans and Mr. Rundell put their heads together, and get returns from the "Cunard" and "Inman" and "White Star" lines for six months; from the White Star line, especially, because of the iron decks and iron houses of their ships. We are not asking too much in the interests of the truth they so dearly love,—and we say that if those learned gentlemen can afterwards show that no alteration of deviation other than what might be expected from a change of magnetic latitude, is recorded in these logs—when the learned gentlemen have done this, and not before, we will admit that our suggestion is of no moment. Whether they do it or not, it will, we trust, be done, and when it is done, it will, we believe, prove that the anonymous writer in the old *Nautical* is right, and knowledge will have been acquired by others.

RULES OF THUMB.

In our July number is a paper on "Rules of Thumb for Steamship Speed, Power, and Coal in the Merchant Service." We are glad to find that a very great amount of interest is attached to that paper, not only by our readers, but also in quarters beyond the ordinary range of our circulation. Our contemporary, *Naval Science*, has been a good deal puzzled by the rules, and has subjected them to analysis: and our learned, but far more practical contemporary, *Engineering*, having discovered and pointed out some errors in the conclusions arrived at by *Naval Science*, has taken up the gauntlet on our behalf.

Engineering speaks of our "Rules of Thumb" as follows:—"Their publication in the *Nautical Magazine* entitles them to the careful consideration we propose now to bestow upon them, and justifies the very honest, very intelligent, very accurate, and calmly philosophic treatment they have received in the pages of *Naval Science* for this month. These two periodicals—the one (the *Nautical*) a monthly of nautical *sense*, the other a quarterly of naval *science;* the one a light blue, and the other a dark blue in complexion, seem to be to some extent imbued with the distinguishing characters we are accustomed to associate with these rival colours; the light blue *Nautical*, in its utilitarian spirit, goes in for practical though only approximate rules as useful generalizations; the dark blue *Naval*, on the other hand, is quite shocked at the proposal even to approximate to speed, power, or displacement without, in the most orthodox fashion, taking into account, *as far as possible*, every consideration affecting the result, and thereby, of course, adopting a method of

calculation, that, except to technical men, would be quite impracticable.

"The *Nautical* considers, as we do, that convenience, and not possibility, should regulate how far every consideration affecting the result may be included in a "rule of thumb." Nautical *sense* would prefer a practical rule without the ornamentation of radical signs, the absence of which is objected to by *Naval Science*. Which is right? We cannot decide, not having yet exhaustively examined these rules; but, taking the evidence given by *Naval Science*, they do seem to possess a higher degree of general approximation than is attributed to them in the article from the *Nautical Magazine*, or than we were disposed to attach to them."

In criticising our Rule V., *Naval Science* had taken the case of the *Elbe*, and had stated that "We (*Naval Science*) shall be quite within the mark if we take the consumption as practically about $2\frac{1}{4}$ lb. per horse-power per hour; this, for a total horse-power of 3,182, corresponds to an actual daily consumption of 76 tons, or upwards of 50 per cent. more than the result given by the rule. We might cite other examples, but these, selected at random, are sufficient for the present purpose."

Thereupon, *Engineering* remarks as follows, pointing out that the conclusions of *Naval Science* are 250 per cent. wrong—viz.:—

"So much for what naval *science* says about the *Elbe*. Turn we now to Mr. Bramwell's paper on the 'Economy of Fuel in Steam Navigation,' read before the Institution of Mechanical Engineers at Liverpool last year; there we find a return for the *Elbe*, the same steamer; it is stated that the 'average consumption of coal per indicated horse-power per hour by steamships with compound engines in long sea voyages' was, in the case of the *Elbe*, on the voyage from Southampton to St. Thomas, in February, 1870, 2·18 lb., that the indicated horse-power was 1,452 horses, and that the coal consumption per 24 hours was 33·8 tons. It may not be fair to criticise the statements of naval *science*, as they are not arrived at by Rule of Thumb, but we merely notice in passing that the result arrived at in this case by detailed calculation is only $\frac{76}{33{\cdot}8} = 2{\cdot}25$, say, about one hundred and twenty-five per cent. too much!"

In the pages of the *Nautical* we have no room to enter into controversy, and we are, therefore, only too glad that our daily, weekly, and quarterly contemporaries, knowing this, are thoughtful enough to reprint our articles, and to open their pages for the discussion of subjects started by us. *Engineering*, we are pleased to see, has expressed an intention to return to the subject shortly; and, judging from the talent in the staff of that paper, we feel that nothing but good can come of discussion in its pages, and we feel ourselves safe in its hands.

TEMPORARY RUDDER.

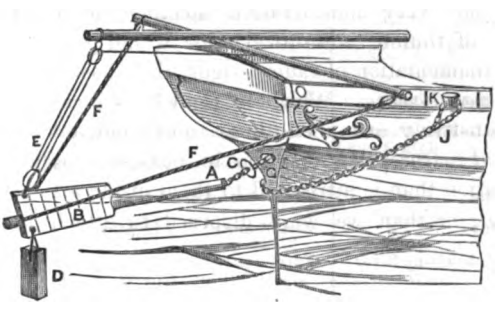


FIG. 1.

FIG. 2.

PASS the end of a chain down the Rudder Trunk, and take it up over the stern; lash the end link to a piece of spar (*a*, Fig. 1) fitted with a blade (*b*); put a mouse (*c*) on the chain, leaving two or three links drift between it and the spar for play; sling a pig of ballast, or other weight, at the lower part of the blade (*d*); fit a block (*e*) for a tackle to trice it up clear of the screw in case of making sternway; fit guys (*f*); lower the whole over the stern, and heave the chain tight until the mouse (*c*) is jammed tight in the lower part of the trunk (*g*); secure the chain (*h*, Fig. 2), reeve the guys (*f*) through blocks at the end of a spar across the stern (*i*), and take them to the barrel of the wheel. When the main piece of the Rudder cannot be unshipped, lash a large shackle to the end of the spar, and reeve the chain (*j*) through the shackle, drop the bight of the chain over the stern, and draw it tight under the counter, securing both ends in board at (*k*).

F. W. WITHERS, Examiner in Seamanship, London.

GUNS AND ARMOUR.—The first heavy guns were 12 tons weight; then 18, 25, and 35 tons. A gun is now to be made of 60 tons, firing a charge of 200lbs. of powder. The weight of the shot is to be more than half a ton. The Woolwich "infant" fires a shot of 700lbs. with a charge of 110lbs., can pierce the 14-inch turret of the *Devastation* at 500 yards; a 16-inch plate would render the turret proof against this gun. The 60-ton gun is intended to pierce a plate of 20 inches. The *Devastation* is safe beyond 500 yards from the most powerful gun existing, but will not be safe from the new 60-ton gun.

MONTHLY ABSTRACT OF NAUTICAL NOTICES.

No.	Place.	Subject.
198	United States—Lake Michigan—Calumet	Establishment of a Light.
199	Baltic Entrance—The Sound—Flint Channel—Kalk Ground	Establishment of a Lightvessel.
200	Kattegat—Aarhuus Bay	Establishment of a Leading Light
201	Gulf of Bothnia—Sibb Skärr	Establishment of a Light.
202	Gulf of Finland—Stirs Point	Establishment of a Light.
203	Africa—South-east Coast—Inhambane River	Further particulars of Light.
204	England—Thames River Entrance	Alteration in Buoyage.
205	England—West Coast—Holyhead	Exhibition of Breakwater Light.
206	Newfoundland—Cape Race Lighthouse	Establishment of a Fog Signal.
207	Mediterranean—Algeria—Arzeu	Alteration in Light.
208	Adriatic—Unie Island—Point Netak	Establishment of a Light.
209	Grecian Archipelago—Syra	Re-establishment of Light.
210	Black Sea—Kherson Bay—Souronovski	Alteration in Light.
211	Scotland—West Coast—Mull of Galloway	Intended alteration in Light.
212	England—West Coast—Liverpool Bay	Alteration in Lightage and Buoyage.
213	Red Sea—Bab-el-Mandeb Strait—Perim Island	Discovery of a Sunken Rock.
214	England—East Coast—Humber River	Alteration in Sands.
215	St. Lawrence Gulf—Miramichi Bay—Negowac Gully	Establishment of a Light.
216	St. Lawrence Gulf—Miramichi Bay—Tabisintac Gully	Establishment of a Light.
217	England—East Coast—Goodwin Sands	Proposed establishment of Light east of Goodwin Sands, and alteration in position of South Goodwin Lightvessel.
218	Ireland—South Coast—Crookhaven Light	Alteration in Light.
219	West Indies—Trinidad—Serpent's Mouth	Discovery of Shoal Ground.
220	United States—Lake Michigan—St. Helena Island	Establishment of a Light.
221	United States—Lake Huron—Pointe aux Barques	Alteration in Light.
222	United States—Calibogue Sound—Dunfuskie Island	Establishment of Leading Lights.
223	England—East Coast—Yarmouth Roads—Caistor Shoal	Establishment of Leading Lights.
224	Adriatic—Ragusa	Alteration in Light.

NAUTICAL NOTICES.

198.—United States.—*Lake Michigan.—Calumet River.*—A *fixed white* light of the fourth order is now exhibited from a stone tower at the entrance of this river; it is elevated 57 feet above the lake, and should be seen 14 miles.

199.—*Baltic Entrance.—The Sound.—Flint Channel.—Kalk Ground.*—A lightvessel has been moored about 2 cables S.S.E. from the shoal; she exhibits a *fixed red* light from the yard of the foremast; it should be seen 6 miles. The vessel is painted red, with the word *Kalkgrundet* on both sides; she will be maintained in her station until compelled by the ice to quit it, but will resume her position as soon as the channel is free from ice. Position, lat. 55° 36′ N., long. 12° 54′ E.

200.—*Kattegat.—Aarhuus Bay.*—Two leading lights have been established on the coast northward of Aarhuus harbour. Three *fixed* white lights are exhibited, placed in an equilateral triangle, and when the two forming the base are in line it leads in the channel beyond the outermost pile.

201.—*Gulf of Bothnia.—Säbb Skär.*—A light is exhibited from a lighthouse on the north side of the island. The light is a *flashing white* light, showing a flash *every minute*, of the fourth order, elevated 117 feet above the sea, and should be seen 16 miles. The tower, built of bricks, is round and painted white. Position, lat. 61° 28′ 40″ N., long. 21° 22′ 30″ E.

202.—*Gulf of Finland.—Stirs Point.*—A white light is now exhibited on this point. The Russian Government announce that further particulars will be hereafter given.

203.—AFRICA.—*South-east Coast.—Inhambane River.*—With reference to Nautical Notice No. 178 (October), the following additional information has been received, viz.:—The light is a *fixed white* light, visible from seaward between N.W. ½ N., and E. by S. ½ S., elevated 80 feet above the sea, and should be seen 14 miles. The tower is situated on Barrow hill, and is painted white. Position, lat. 23° 45′ 30″ S., long. 35° 33′ 10″ E.

Note.—Vessels anchoring at night should do so with the light bearing S. by E., there being 10 fathoms water at a distance of 3 miles from the lighthouse on that bearing, but vessels may anchor nearer the shore in 6 to 7 fathoms, with the light bearing S.S.E. ½ E., where they will be sheltered from southerly winds.

204.—ENGLAND.—*Thames River Entrance.*—The following alteration has been made in the buoyage of the Entrance of the River Thames:—

West Sunk Buoy.—In order to improve the navigation of the East Swin, a large *can* buoy, painted in *black and white vertical stripes*, has been placed about 6 cables from the west part of the Sunk sand.

The buoy is moored in 10 fathoms at low water springs, with the following mark and bearings, viz. :—

Gunfleet lighthouse in line with the inner end of Walton pier	...	N. $\frac{3}{4}$ W.
Gunfleet lighthouse	... ...	N. $\frac{3}{4}$ W. distance $3\frac{1}{2}$ miles.
Heaps buoy	... ...	W. $\frac{1}{4}$ N. $4\frac{9}{10}$ miles.
Sunk Head buoy	... ...	E. by N. $\frac{3}{4}$ N. $4\frac{1}{2}$ miles.

North Oaze Buoy.—Also, with reference to Nautical Notice No. 187 (October), on the intended establishment of a buoy on the north side of the Oaze sand, a *can* buoy, painted in *black and white vertical stripes*, has been moored in $5\frac{3}{4}$ fathoms at low water springs, with the following mark and bearings, viz. :—

The South-eastern beacon of measured mile, in line with Great Wakeling church	...	N. W. $\frac{1}{2}$ W.
East Oaze buoy	... ...	E. by S. $1\frac{2}{10}$ miles.
West Oaze buoy	... ...	W. by S. $\frac{1}{2}$ S. $2\frac{8}{10}$ miles.
Mouse lightvessel	... ...	N. by E. $1\frac{3}{10}$ miles.

East River Middle Buoy has been changed from a "can" to a *conical* buoy, with staff and diamond.

West Girdler Buoy has been changed from a "can" to a *spherical* buoy.

Shingles Spit Buoy has been changed from a "can" to a *conical* buoy.

205.—ENGLAND.—*West Coast.—Holyhead.*—With reference to Nautical Notice No. 93 (May), respecting the intended establishment of a light on the breakwater, notice has been given that the light is now exhibited. The light is a *red* light, with *strong flashes at intervals of fifteen seconds*, 66 feet above the water. The *flashes* will be visible $13\frac{1}{2}$ miles. The *fixed red* light will only be visible 3 to 4 miles. The temporary fixed red light on mast is discontinued. A bell will be sounded in foggy weather *three times* in quick succession at intervals of *fifteen seconds*.

206.—NEWFOUNDLAND.—*Cape Race Lighthouse.*—A fog whistle has been established near this lighthouse. In thick or foggy weather the whistle will sound blasts of *ten seconds* duration, with intervals of *fifty seconds*. It will probably be heard—In calm weather, 20 miles; with the wind, 30 miles; stormy weather or against the wind, 7 to 10 miles.

207.—MEDITERRANEAN.—*Algeria.—Arzeu.*—The light on the jetty at Port Arzeu has been moved to the head of the jetty. The light is now a *fixed red* light of the fourth order, elevated 25 feet above the sea, and should be seen 8 miles.

208.—ADRIATIC.—*Unie Island.—Point Netak.*—A light is now exhibited from a lighthouse on Point Netak, Unie Island. The light is a

fixed white light, 44 feet above the sea, and should be seen 8 miles The lighthouse is attached to the keeper's dwelling, and both are painted white. Position, lat. 44° 37′ 20″ N., long. 14° 14′ W.

209.—GRECIAN ARCHIPELAGO.—*Syra.*—With reference to Nautical Notice No. 167 (September):—The light is again exhibited.

210.—BLACK SEA.—*Kherson Bay.*—*Souronovski.*—During the navigable season, a *green* light will be exhibited from this lighthouse, but not interfering with the limits of the white light (which includes no danger to navigation) as heretofore exhibited.

211.—SCOTLAND.—*West Coast.*—*Mull of Galloway Light.*—From the 3rd day of November, 1873, the following alteration will be made in the alternations of light and darkness in Mull of Galloway light. The light, which now shows two and a half minutes, followed by an eclipse of half a minute, will appear as a *fixed* light for *thirty seconds*, succeeded by a sudden and total eclipse for *fifteen seconds*.

212.—ENGLAND.—*West Coast.*—*Liverpool Bay.*—The following alterations have been made in the lightage and buoyage in Liverpool bay, viz.:—

North-west Lightvessel has been moved N.W. by W. ¾ W. and is now moored with the following marks and bearings:—

Bidston and Leasowe lights in one	S.E. ¼ E.
Orms head lighthouse	W. by S. ½ S. 16 miles.
Horse channel fairway buoy ...	S.E. ¼ E. 8½ miles.

These bearings place the lightvessel in lat. 53° 30′ 20″ N., long. 3° 31′ 20″ W.

Bar Lightvessel.—A lightvessel has been placed in the approach to the principal Northern channel, and called the *Bar lightship*. The vessel is rigged similarly to the other Liverpool lightvessels, and exhibits a *fixed* white light.

The vessel is moored with the following bearings, viz:—

North-west lightvessel (new position)	W. by N. 8¼ miles.
Victoria buoy	S.E. by S.
Queen channel bell beacon ...	E. by S. 1½ miles.
Formby N.W. buoy	E. by N. ½ N. 4 miles.

These bearings place the lightvessel in lat. 53° 31′ 50″ N., long. 3° 18′ W.

Formby Light.—The light exhibited from the Formby lightvessel has been changed from a fixed red light to a *revolving red* light, and to distinguish this vessel by day from the other lightships, the colour of the hull has been changed from red to *black*, without any riband.

Rock Channel.—The buoys in this channel have been altered as follows:—Additional black buoys have been placed on the North side of the channel, the numbers running from No 1 (Spencer's spit bell buoy) to No. 9, the perch buoy, north of Rock lighthouse. Instead of the irregular line of buoys from No. 2 to No. 5, by the new arrangement from No. 2 to No. 7 form a straight line of buoys bearing East and West from each other, marking the steep margins of the banks on the north side of the channel. The position of the buoys Nos. 8 and 9 are the same as those formerly Nos. 6 and 7. The red can buoys, Nos. 3, 4, and 5, have been removed. Improved fog signals will be furnished to the Bar and Crosby lightvessels, and, as a further improvement for the navigation of the Rock channel, it is intended to establish a powerful permanent light in place of the temporary light exhibited in connexion with the works at the North Dock wall.

213.—Red Sea.—*Bab-el-Mandeb Strait.—Perim Island.*—Information has been received of the existence of a sunken rock on which the steamship *Azalea* was wrecked, off the east side of the island, and stated to be at a distance of 387 yards from the shore. The danger (*Azalea reef*) has 11 feet on its shoalest part, and from it Perim island lighthouse bore N.W. $\frac{3}{4}$ N., the south-east point of the island S.W. by W. $\frac{1}{4}$ W., and Bab-el-mandeb peak N.E.

Note.—It is reported that the tides are not to be relied on in this neighbourhood, and that the currents are variable and strong.

214.—England.—*East Coast.—Humber River.*—With reference to Nautical Notice No. 188 (October), relative to the extension of the Skitter sand, the following further particulars are given:—The Skitter sand between the buoys Nos. 8 and 9 has extended to the north-eastward, narrowing the main channel between Paull and Hull. The sand near buoy No. 8, where there has usually been from 18 to 20 feet at low water springs, now dries, and the buoy is in 2 fathoms only. In consequence of this extension of the Skitter sand, the Low light at Paull Clough has been moved a little to the northward. The West Middle shoals having also extended to the northward, the Low light at Salt end has been moved a little to the northward. These alterations have been made to maintain the efficiency of these lights as leading lights for the guidance of vessels to the lower part of Hull road.

215.—St. Lawrence Gulf.—*Miramichi Bay.—Negowac Gully.*—A light is now exhibited from a lighthouse on the north-east side of the Gully, northside of Miramichi bay. The light is a *fixed white* light, elevated 35 feet above high water, and should be seen 11 miles. Position, lat. 47° 14′ 50″ N., long. 65° 0′ 20″ W.

216.—St. Lawrence Gulf.—*Miramichi Bay.—Tabisintac Gully.*—A light is now exhibited from a lighthouse on Crab island, Tabisintac Gully,

north side of Miramichi bay. The light is a *fixed red* light, elevated about 30 feet above high water, and should be seen 7 miles. Position, lat. 47° 17′ 35″ N., long. 64° 56′ 50″ W.

217.—ENGLAND.—*East Coast.—Goodwin Sands.*—With a view of facilitating navigation outside the Goodwin sands, it is intended, on or about the 1st January, 1874, to place a lightvessel about $1\frac{1}{2}$ miles to the eastward of the Goodwin Sands. The vessel will be named *East Goodwin*, and will exhibit a *green revolving* light, showing a flash at intervals of *fifteen seconds*. At the same time the South Sand Head lightvessel will be moved 9 cables to the southward.

218.—IRELAND.—*South Coast.—Crookhaven Light.*—From the 14th November, 1873, the following alteration will be made in the red sector of Crookhaven light. The *red* sector of light will be extended, and the light will show *red* when seen between the bearings of N. $\frac{1}{2}$ E. and N.W. by W.

219.—WEST INDIES.—*Trinidad.—Serpent's Mouth.*—Information has been received of the existence of shoal ground, composed of hard clay and small stones, in the Eastern channel of the Serpent's Mouth, off Corral point, on which the steamship *Demerara* lately struck. This danger has 16 to 17 feet on it at low water springs, with 4 to 6 fathoms around. From the shoalest part, Soldado rock bears West, the buoy of the Wolf rock S. by E., and the westernmost Gallos rock, N.E. by E., distant $1\frac{6}{10}$ miles. A buoy has been moored about 20 yards east of the position of the shoal.

220.—UNITED STATES.—*Lake Michigan.—St. Helena Island.*—A light is now exhibited from a red brick tower on the south-east point of the island. The light is a *fixed red* light elevated 71 feet above the lake, and should be seen 15 miles.

221.—UNITED STATES.—*Lake Huron.—Pointe aux Barques Light.*—This light has been changed from a fixed white light to a *revolving white* light, having an interval of *ten seconds* between the brightest flashes.

222.—UNITED STATES.—*Calibogue Sound.—Dunfuskie Island.*—The following leading lights to mark the channel into Calibogue sound from Tybee roads are exhibited on the north-east point of Dunfuskie island. The southern or low light is a steamer lens exhibited from a white frame tower 15 feet high, near the shore; it is elevated 18 feet above high water. The northern, or high light, is a *fixed white* light of the fifth order, situated 750 yards N. $\frac{1}{2}$ W. from the low light, and is exhibited from the keeper's dwelling, which is painted white; it is elevated 61 feet above high water.

Directions.—Vessels from Tybee roads should bring the leading lights in line when Tybee main light bears S.W. by W.; they should then be kept in one bearing, N. $\frac{1}{2}$ W., until Braddock point is passed, when the

course is N. by E. in mid-channel. Shoals lie close to the south end of the channel on the leading course, and a strong current sets across it. Eight and a half feet water can be carried through the channel where it crosses the shoal at low water.

223.—ENGLAND.—*East Coast.—Yarmouth Roads.*—In accordance with Nautical Notice No. 94 (May), the leading lights at Yarmouth for clearing the Caistor shoal are now exhibited. The High light is a *fixed red* light exhibited from an upper window of the Sailors' Home, Yarmouth, at an elevation of 60 feet above high water; the lower light is also a *fixed red* light exhibited from the Britannia pier, at an elevation of 20 feet above high water. The lights in one, bearing S.W. ½ S., lead 1 cable clear of the Caistor Elbow.

224.—ADRIATIC.—*Ragusa.*—Through a German notice, we learn that the light exhibited at the end of the breakwater, in front of Cassone di Ragusa, has been removed to the outer end of the new mole, near Fort Molo. The light exhibits a *red* light towards the sea, and a *white* light towards the harbour; it is elevated 25 feet above the sea, and should be seen 4 miles. Position, lat. 42° 28′ N., long. 18° 7′ E.

CHARTS, *&c., Published by the Hydrographic Office, Admiralty, to the end of October*, 1873, *and Sold by the Agent, J. D. Potter*, 31, *Poultry, and* 11, *King Street, Tower Hill.*

No.	Scale.		s.	d.
994	m = 2·0	Japan—Mura and Goza Harbours ...	2	6
988	m = 1·5 / 0·4	North Pacific—Ebon and Arhns Atolls, Marshal Group	1	0
944	m = various	Philippine Islands—Harbours on South side of Busuanga Island, and Ports Culion and Batau	1	6
949	m = various	Philippine Islands, Ports in—Port Galero and Veradero Bay, and Ports Concepcion and Canoau	1	6
295	m = 3·9	Newfoundland, East Coast—Barrow, Broom-close and Sailors Harbours	1	6
2295	m = 6·0 / 4·0	Norway—Trondhjem and Oreland Bays ...	1	6
945	m = 3·0	Philippine Islands—Ports Masingloc and Matalvi	1	6
2126	m = various	New Guinea—Port Moresby and Fairfax Harbour	1	0

No.	Scale.		s.	d.
986	m = 15·5 / 9·0	South Pacific—Vanikoro Islands, with Tévai and Manevai Bays, Santa Cruz Islands	2	6
560	m = 7·1 / 1·8	South America, West Coast, Indian Reach—Port Riofrio, and Crossover Island to Gorgon Reef	1	6
758	m = 0·85	Madagascar, Northern Portion—Cape St. Andrew to Antongil Bay	2	6
987	m = various	South Pacific—St. Augustine, Rotumah, Horne, Uea, or Wallis Island, &c. ...	1	6
996	m = 0·16	Japan, South Coast—Kü to Yedo ...	2	6
2772	m = 0·1	Africa, Gulf of Guinea—Grand Bassam to Cape St. Paul	2	0

OUR OFFICIAL LOG.

BOARD OF TRADE SURVEYORS.

The following changes in the north-eastern, eastern and western coasts of Scotland, and the Mersey districts have been made :—

NORTH EASTERN DISTRICT: FROM THE HUMBER TO THE TWEED.

This district will, as heretofore, have its head-quarters at Newcastle, with Mr. Leighton Mills, C.E., as principal engineer and shipwright surveyor. Mr. Mills will have the assistance of Captain Balfour, R.N. (who will be stationed at North Shields), in the duty of recording draught of water, and reporting on unseaworthy and overloaded ships, and the following staff of surveyors :—

Newcastle—Mr. J. G. Taylor, S. and E. surveyor, removed from North Shields; Mr. J. B. James, assist. S. and E. surveyor; Mr. W. Hayes, assist. S. surveyor; with two tapeholding messengers.

North Shields—Mr. H. W. Reed, assist. S. and E. surveyor; Mr. E. T. Hamilton, S. surveyor, removed from London, for the duties of tonnage admeasurement, &c.; with a tapeholding messenger.

Sunderland—Mr. T. J. Richards, S. and E. surveyor, will have charge of this important port, with Mr. James Vercoe as assist. S. and E. surveyor, and Mr. R. T. Williamson, S. surveyor for tonnage, &c., duty; and two tapeholding messengers; Captain Monger will take the duty of recording draught of water, and reporting on unseaworthy and overloaded ships.

Middlesbro' and Stockton—Mr. Alex. Munro has been recently taken over from the Customs' service for tonnage and draught of water work at these ports.

Hull—Mr. J. Spear, S. and E. surveyor for the port, with Mr. J. Stewart, S. and E. surveyor, removed from London, and Mr. John McKenzie, assist. S. and E. surveyor; Captain John Smyth has been appointed for the duty of recording draught of water, and reporting on unseaworthy and overloaded ships, and will have the assistance of Mr. Donovan; two tapeholding messengers are allotted to this port.

District of the East Coast of Scotland.

This is a new district, with *Leith* as its headquarters, of which Mr. George Carlisle has been appointed principal S. and E. surveyor. In addition to Mr. Carlisle, the following staff has been assigned to this district:—

Leith—Mr. Jas. Rae, assist. S. and E. surveyor, removed from London; Mr. D. A. Glasgow, S. surveyor, to take charge of the duties connected with tonnage admeasurement, &c., for the district; and a tapeholding messenger.

Dundee—Mr. Jas. Grant, assist. S. and E. surveyor, with the assistance of Mr. A. Nicol for tonnage duty.

Aberdeen—Mr. J. Sowter, S. and E. surveyor, will take charge of the portion of the district extending from Wick to Arbroath, under the direction of Mr. Carlisle, and will have the assistance of an officer appointed to record the draught of water of seagoing ships at Aberdeen.

District of the West Coast of Scotland.

For the whole of this extensive district the entire staff of surveyors has, hitherto, been stationed at Glasgow. Very important changes have now been made which cannot fail to ensure a much more efficient discharge of the duties in the district, which, as before, will be under the charge of Mr. Robert Murray, S. and E. surveyor, at Glasgow. Captain M. H. Smith will undertake the duty of recording draught of water, and reporting on unseaworthy and overloaded ships, under the direction of Mr. Murray, and will be stationed at Greenock or Glasgow as circumstances may require. The following list will show the other appointments and changes in the district:—

Glasgow—Mr. J. Ramsay, S. and E. surveyor, removed from London, with Mr. J. Fielden, assist. S. and E. surveyor; Mr. M. Costello, S. surveyor, for tonnage duties; and Mr. W. P. B. Manser, for draught of water.

Greenock—Mr. F. W. Wymer, S. and E. surveyor, will now undertake the duties of this port removing from Glasgow. Three tapeholding messengers are allotted to the district.

Ardrossan—Mr. R. Hetherington, assist. S. and E. surveyor, will be removed from Hull for the general duty of this port.

Mersey District.

The staff in this district requires very little change to enable them to meet the increased demand on their services. In order to ensure a more efficient discharge of the duties, however, Mr. W. C. Taylor, the principal S. and E. surveyor at Liverpool, has been relieved from the more active outside duty connected with surveying, and has been appointed, in addition to principal surveyor, the principal engineer examiner in steam, and will henceforth confine himself to the examination of engineers, and masters and mates in steam, with the decision of any important matters connected with surveying that it may be found necessary to refer to him; Mr. W. H. Bisset, S. and E. surveyor, has been appointed assistant principal surveyor, and upon him will now devolve the charge and regulation of the whole of the outdoor surveying staff and duties; Captain Sandeman will have charge of the recording of draught of water, and reporting on unseaworthy and overloaded ships, in which duty he will have the assistance of Mr. Robert Bretland, S. surveyor. In other respects, the staff at Liverpool will remain the same, two tapeholding messengers being appointed to assist in tonnage admeasurement.

Belfast.

In addition to the above, the staff at Belfast has also been reorganized as under :—

Mr. J. J. Rose, S. and E. surveyor, will have charge of the port, and has been appointed examiner of engineers, and of masters and mates in steam.

Mr. H. B. Fabian, assist. S. and E. surveyor, removed from Cardiff; and a tapeholding messenger to be appointed.

Board of Trade Circular.

Instructions to Surveyors under the New Act.—1. The Surveyors and their assistants should make themselves well acquainted with the whole of the Merchant Shipping Act, 1873, a copy of which has recently been forwarded to them.

2. As regards Section 3, containing a statement of certain particulars to be marked on British Ships, the Surveyors should ascertain by actual measurement, in the case of new ships, before registry, and in the case of other ships whenever they may see them in dock or on the ground, that the scales of feet on the stem and stern are accurately measured.

3. In the case of iron ships, the scales and the letters or figures should be cut in on each side of the stem and stern with a cold chisel, and in the case of wooden ships the letters or figures are to be of lead, nailed

on. Where the body of the stem and stern posts is light in colour, the letters or figures must be coloured black or dark, and where the ground is dark the letters or figures must be white or light.

4. As regards Section 4, the Surveyors will be guided by the former Circulars as to recording the draught of water, but they should bear in mind that no ship on the point of sailing is to be detained to obtain the depth of hold. Where the Certificate of Registry can be readily referred to, the depth of hold should be taken from it and inserted in the form. Where it cannot, and when the depth of hold cannot be readily measured, it will be procured by the Board of Trade from the ship's register. In the case of emigrant ships the draught of water and depth of hold should be reported by the Emigration Officer who clears her. Where a ship has a list, the clear side should be measured on both sides of the ship.

5. As regards Section 6, the Surveyors will have to survey for seaworthiness all ships that are re-registered after they have been reported as wrecked or abandoned, or whose registers have been closed for any reason other than capture by an enemy or transfer to foreigners. In order that Surveyors may be kept informed of British ships whose registers are closed, the Registrar-General of seamen will forward to them monthly a list of such ships.

6. Under Section 12, the Surveyors will have a difficult and responsible duty to perform; on the one hand a ship which by reason of the defective condition of her hull, equipments, and machinery, or by reason of overloading or improper loading, is unfit to proceed to sea, without serious danger to human life ought not to be allowed to do so; on the other hand great care must be taken that the trade of the country is not unnecessarily interfered with. The Surveyors will be careful to observe that they have under this section no power to detain a ship, or even to survey her (except with the consent of the Owner), unless the Board of Trade specially direct them so to do; so that their duties are, in the first instance, and in the absence of such directions, confined to giving the Board due notice of any cases which may come to their knowledge.

7. In any case, therefore, in which a Surveyor has reason to believe that a ship is by reason of the defective condition of her hull, equipments, or machinery unfit to proceed to sea without serious danger to human life, or that any ship about to sail is by reason of overloading or improper loading unfit to proceed to sea without serious danger to human life, he should, if practicable, at once consult with his colleagues, and after or, as the case may be, without consultation, should send a report to the Board of Trade of the precise nature, causes, and extent of the apprehended danger. If necessary, and if the case is extreme and urgent, this communication should be by telegram.

8. The Surveyors have ample power to go on board ships when

directed by the Board of Trade. In any case in which they are directed to act their first care should be to give to the Master or Owner, or to the person having custody of the ship for the time, a notice to the effect that no act must be done to obstruct or prevent the Surveyor from making his survey. In some cases the inside of a ship has been covered with thick tar so as to conceal defects and obstruct the Surveyor; against any practice of this kind the Surveyors should specially warn the persons interested. In the event of any obstruction of this or any other kind being attempted, the Surveyors should at once report particulars of the offence, and of the name and address of the offender, to the Board of Trade.

9. As regards boats and rafts, Section 15, the Surveyors will be guided by the present scale, which they will regard as a maximum for boats, and in the event of Owners wishing (1) to carry fewer boats or other boats; or (2) wishing to substitute rafts or other appliances for the boats they are required by law to carry, the Surveyor should, before giving a declaration, refer each case, with full particulars, for the consideration of the Board of Trade.

10. As regards Section 19, signals of distress, the Surveyors and Emigration Officers should, before granting a declaration or clearance for sea-going ships, see that the means of making each of the signals indicated are on board. A gun is to be provided. The gun may be either a mortar, or an ordinary cannon, carronade, or howitzer. If a mortar is provided, it must not be of less size than a 24-pounder, *i.e.*, 5½ inches in the bore. Mortars of a less size are absolutely useless as signal guns at sea. If another gun is carried, it should be at least sufficiently large to take in a 6 lb. spherical shot, that is to say, at least 3½ inches in the bore. Many of the large ships belonging to high class Owners carry still larger guns.

11. In the case of mortars and in the case of six pound guns the charges of powder should be 16 oz. each. There should be at least twelve 16 oz. charges, each made up in a flannel bag, and deposited in an air-tight metal magazine. Rammers, sponges, wads, priming wires, powder flask for priming, and means for firing and for withdrawing charges should be provided and carefully examined. At least twelve rockets containing 16 oz. of composition must also be provided. The proper number of sticks and the proper means for connecting them with the rockets must also be provided. The rockets may be of any colour.

12. The fees for measurement of tonnage are to be paid to the Superintendent of a Mercantile Marine Office, and no ship is to be visited for measurement until the fees have been paid, and the Surveyor receives intimation thereof through the Superintendent. This applies to foreign

ships as well as to British ships, and whether measured under Rule 1 or Rule 2.

13. Where, however, the gross tonnage of a foreign ship, or of any ship, has been ascertained by the British system, and is stated on the Certificate of Registry, the fees are only to be charged for the tonnage of the space actually measured. The countries to whose ships this paragraph applies are—Austro-Hungary, Denmark, France, Germany, Italy, United States.—*Circular No.* 655, *September*, 1873.

BOARD OF TRADE INQUIRIES AT HOME.

133. *Biafra*, of Teignmouth, stranded about two cables' length from Ramsgate Pier, 7th June. Inquiry ordered 24th June. Proceedings pending.

143. *Bridemaid*, schooner, of Jersey, stranded, 2nd June, off Barfleur Lighthouse. Inquiry ordered 1st July. Proceedings pending.

155. *Manchester*, of. Workington, stranded on Jordan Flats, 24th June. Inquiry ordered 19th July, and held at Workington, 16th September, before Rev. H. Curwen, J.P., and R. Fletcher, Esq., J.P., with Admiral Powell and Captain Steele as nautical assessors. The master was exonerated and the certificate was returned.

156. *Valetta*, of Newcastle, leaky in lat. 24° 32′ S., long. 54° 10′ E., 7th March. Inquiry ordered 19th July. Proceedings pending.

157. *Henry Woolley*, of Borrowstoness, foundered 150 miles E. of the Isle of May, on 27th June. Inquiry ordered 22nd July. Proceedings pending.

164. *Berwick*, s.s., of London. Explosion about five miles off the Dudgeon, 9th May. Inquiry held at the Police Court, Greenwich, before D. Maude, Esq., stipendiary magistrate, assisted by Admiral Powell and Mr. W. Darley as nautical assessors. Master exonerated.

166. *Aberdeenshire*, s.s., of Hull, stranded on Inner Binks Spurn, 16th March. Inquiry ordered 4th August, and held at Hull, before W. Wrangham, Esq., with Commander Knox and Captain Hight as nautical assessors. The master was ignorant of the strong set of the ebb-tide, and did not call the assistance of the mate, who was a qualified pilot for the district. Mate exonerated.

170. *Eleanor Alice*, of Beaumaris, sprung a leak and foundered off Porthcain, 21st July. Inquiry ordered 13th August. Proceedings pending.

172. *Creole*, of Belfast, stranded half-a-mile S. of the Calf of Man, 27th July. Inquiry ordered 16th August, but subsequently abandoned,

the case not being of sufficient importance to warrant the detention of the one available witness.

176. *Waveney*, of Lowestoft, stranded N.E. end of Longsand, 31st July. Inquiry ordered 16th August, and held 9th September at Great Yarmouth, before Charles Woolverton, Esq., J.P., and R. D. Barber, Esq., J.P., with Commander Forster and Captain Harris as nautical assessors. The master had retired at the time of stranding, leaving the vessel in charge of the mate, George King. The mate put a boy to the helm and left him, though quite incompetent, without any supervision until the time of casualty. For this conduct the Court suspended his certificate for three calendar months from 9th September.

180. *Skerryvore*, s.s., and *Llama*, s.s., both of Glasgow, came into collision, near Lower Lighthouse, Belfast Lough, 21st July. Inquiry ordered 22nd August, and held at Glasgow, before J. Young, Esq., J.P., and H. Mac Bean, Esq., J.P., with Captains Grant and Nicolas as nautical assessors. The Court found that the master of the *Skerryvore* acted unjustifiably in attempting, under the circumstances, to cross the bows of the *Llama*, and they suspended his certificate for nine months. They also severely censured the master of the *Llama* for the great speed at which his vessel approached the *Skerryvore*.

181. *Alabama*, s.s., and *Abeona* came into collision (*Abeona* sunk). Inquiry ordered 25th August, and held at Glasgow, before A. H. McLellan, Esq., J.P., and J. Matheson, Esq., J.P., with Captains Grant and Nicolas as nautical assessors. Master of *Alabama* severely censured for lack of judgment after collision. The second officer of *Alabama* guilty of grave default. His certificate suspended for eighteen months.

182. *Azuline*, of Newcastle, foundered in lat. 40° 34′ N., lon. 49° 38′ W., 31st January. Inquiry ordered 29th August, but subsequently abandoned, there not being sufficient evidence.

184. *Belmont*, of Sunderland, stranded eight or nine miles E. of Cape Finisterre, 21st July. Inquiry ordered 30th August, and held at Sunderland, before Geo. McKenzie, Esq., mayor, Geo. R. Booth, Esq., J.P., with Captains Harris and White as nautical assessors. Master's certificate suspended for three months, as he was found to have neglected the ordinary precautions.

185. *Peace*, of Yarmouth, stranded on some rocks at Ryhope Snook, 16th August. Inquiry ordered 3rd September, and held at Great Yarmouth, before Chas. Woolverton, Esq., J.P., and Garson Blake, Esq., J.P., with Commander Forster and Captain Harris as nautical assessors. Court unanimously of opinion that casualty was due to the gross neglect of the master, and, as he held no certificate, he was ordered to pay not more than £5 as a portion of the costs.

186. *Abbots Reading*, of Liverpool, stranded in lat. 62° 55′ N., long. 20° 16′ E. (Gulf of Bothnia), on 28th July. Inquiry ordered 12th September. Proceedings pending.

187. *Era*, of Rochester, stranded near Southwold, 6th September. Inquiry ordered 17th September, and held on the 27th, at Rochester, before W. H. Nicholson, Esq., J.P., and H. Savage, Esq., J.P., with Captain Sceales and Commander Knox, as nautical assessors. Court found the master guilty of negligence, and ordered him to pay £5 towards the costs.

188. *Benachie*, s.s., of Aberdeen, foundered in the Strait of Gibraltar, 3rd August. Inquiry ordered. Proceedings pending.

189. *T. E. Lemon*, of Liverpool, stranded near the Bar of Queen's Channel, 29th August. Inquiry held at Liverpool, before T. S. Raffles, Esq., stipendiary magistrate, with Captains Hight and White as nautical assessors. Court attributed loss to the violence of the gale. The orders of the pilot in charge were promptly obeyed by the master. Under these circumstances the Court returned his certificate.

190. *South*, s.s., of Liverpool, stranded off Arzila, 10th August. Inquiry ordered 20th September. Proceedings pending.

191. *Black Duck*, s.s., of London, stranded on Gunfleet, 10th September. Inquiry ordered 22nd September, and held at Greenwich, before D. Maude, Esq., with Captains Steele and Knox as nautical assessors. Master had committed a grave error in steering a W.S.W. course with the Gunfleet light on that bearing. He was also blamed for not accepting at least one of the several offers of assistance made to him; and his certificate was suspended for twelve months, from 4th October.

192. *Benwell*, s.s., of Newcastle, in collision with a fishing vessel, 24th August, near Elbe lightship. Inquiry ordered 22nd September. Proceedings pending.

193. *Elizabeth*, of South Shields, near North Pier Head, Arbroath, 28th August. Inquiry ordered 22nd September, and held at South Shields, before W. James, Esq., J.P., and A. Stevenson, Esq., J.P., with Captains Forster and Wilson as nautical assessors. Court found master in default, and as he held no certificate, he was ordered to pay the costs of inquiry, which did not exceed £5.

194. *Senior*, of Sunderland, foundered, 14th July, in lat. 29° 44′ S., long. 40° 15′ W. Inquiry ordered 22nd September. Proceedings pending.

195. *Wallamo*, foundered in the North Sea, 16th September. Inquiry ordered 22nd September. Proceedings pending.

196. *Brownlow*, of Hull, foundered (abandoned) off Spurn, 5th September. Inquiry ordered 22nd September. Proceedings pending.

197. *Hilton Philipson*, of South Shields, foundered in the Bosphorus, 7th August. Inquiry held 23rd September, at South Shields, before J. Strahan, Esq., J.P., and E. Moore, Esq., J.P., with Commander Forster and Captain Wilson as nautical assessors. Master not in default, but had shown an error in judgment in fitting his vessel with too large a cargo. Neither was the vessel fitted for her cargo.

198. *M. M. Peter*, of London, stranded off village of Salinas, 20th July. Inquiry ordered 25th September, and held at Greenwich, 6th October, before J. H. Patteson, Esq., stipendiary magistrate, with Captains Steele and Knox as nautical assessors. As the master had acted properly both before and after the casualty, Court returned his certificate.

199. *Annie*, of South Shields, stranded near Flamboro' Head light, 22nd August. Inquiry ordered 29th September, and held at South Shields, 8th October, before J. L. Hall, Esq., J.P., and R. Imeary, Esq., J.P., with Captains Forsters and Wilson as nautical assessors. Court found that the vessel was lost through the default of master, but in consideration of his previous good character, suspended his certificate for three months only, from date of inquiry.

200. *Nancy*, of Carnarvon, on fire E. of Bardsey Island, 9th September. Inquiry ordered 29th September. Proceedings pending.

201. *Orwell*, of St. Ives, foundered W. of Bill Buoy, 10th September. Inquiry ordered 29th September. Proceedings pending.

202. *Aulaby*, of Hull, stranded W. of Island of May, 23rd August. Inquiry ordered 29th September. Proceedings pending.

203. *Gem*, of Wexford, stranded on Dogger Bank, Wexford, 4th September. Inquiry ordered 1st October. Proceedings pending.

204. *Coquette*, of Ramsey, stranded about one mile S. of Ramsey Harbour, 13th September. Inquiry ordered 1st October. Proceedings pending.

205. *Lizzie*, of London, stranded half a mile S. of St. Mary's Isle, 19th September. Inquiry ordered 2nd October. Proceedings pending.

206. *May Queen*, of Grimsby, in collision with *Vivid*, of Hull, off Flamboro' Head, bearing W. fifty miles from Spurn, 4th September. Inquiry ordered 2nd October. Proceedings pending.

207. *Yoruba*, of London, stranded on reef of rocks off Cape Palmas, West Coast of Africa, 31st May. Inquiry ordered 2nd October, and held at Liverpool, 9th October, before T. S. Raffles, Esq., stipendiary magistrate, with Captains Hight and Grant as nautical assessors. Vessel in usual berth at time of casualty, and beached by orders of the first mate (since deceased). Master honourably acquitted.

208. *Woodville*, of Lynn, foundered on Swadman Reef, Fern Island, 21st September. Inquiry ordered 2nd October. Proceedings pending.

209. *Far West*, of North Shields, stranded off the Tytters, 8th August. Inquiry ordered 4th October. Proceedings pending.

210. *Penrhyn Castle* and *Great Western* in collision ¼ mile off St. Anne's Head, 30th September. Inquiry ordered 4th October. Proceedings pending.

211.—*Canadian*, of North Shields, stranded on the Maydulse Rocks, Firth of Forth, 16th September. Inquiry ordered 4th October. Proceedings pending.

212. *Maria Lee*, explosion, Long Reach, London River, 30th June. Inquiry ordered 6th October. Proceedings pending.

INQUIRIES ABROAD.

187. *Express*, of Preston, stranded on Lagos Bar, 1st July. Inquiry held 4th July, at Lagos, before Major M. Doorly, stipendiary magistrate, Captain Austin, J.P., and Mr. T. Maurant, master mariner. Casualty attributed to want of judgment on the part of the pilot (Jackson), who attempted to cross the bar, after seeing boats and a steamer decline. His certificate was suspended for four months from date of stranding.

188. *Tinnevelly*, of South Shields, stranded off the Isle of Mayatte, 15th June. Inquiry held before the Marine Board, Mauritius, 18th July. Casualty attributed to the injudicious navigation of the master, but, as he had been on deck the whole night, Court suspended his certificate for six months only from 18th July. Mate censured for the careless manner in which he kept the ship's log.

189. *Marie Thérese* and *Fear Not*, in collision on the Petit Riviere, Mauritius, 3rd June. Inquiry ordered before the Mauritius Marine Board, 3rd July. The *Marie Thérese* solely to blame. Certificates returned to the master and chief officer of the *Fear Not*.

190. *Montpelier*, stranded near Alibaugh, 15th June. Inquiry held at Bombay. Court found that the master did not take the proper precautions in entering port. His certificate was suspended for twelve months. The mate was exonerated.

191. *Queen of the Belgians*, stranded off Gazon, 1st July. Inquiry ordered before the Monte Video Consulate. Casualty atttributed to the masters having mistaken the lights. Court also thought that due attention had not been paid to the rating of the chronometer and the adjustment of the compasses.

192. *Veritas*, foundered 21st August, in lat. 25° 20′ N., long. 73° W. Inquiry held 25th August, before J. Stafford, R.I. Loss accidental, caused by the vessel being heavily laden.

Naval Court Enquiries.

30.—*Dawn.*—On the 20th September, 1873, a Naval Court was held at Ancona, under the presidency of H.B.M. Consul, to enquire into a charge of cutting and wounding preferred against a seaman of the *Dawn*. He was sentenced to three months' imprisonment.

31.—*Florence.*—On the 31st May, 1873, a Naval Court was held at Samoa, under the presidency of H.B.M. Consul, to enquire into a charge of barratry and bribery preferred against the master of the *Florence*, of Auckland. He was ordered to be removed from command of his ship, and to be taken as a prisoner to Auckland for trial.

32.—*Atlas.*—On the 25th of September, 1873, a Naval Court was held at Genoa, under the presidency of H.B.M. Consul, to enquire into a charge of unlawfully refusing duty, preferred against two seamen of the *Skerrymore*. They were respectively sentenced to two and four weeks' imprisonment.

33.—*Henry Albert.*—On the 12th July, 1873, a Naval Court was held on board H.M.S. *Sandfly*, at Makira Bay, San Christoval, to enquire into charges of mutiny, incapacity, and drunkenness, preferred against the master and mate of the *Henry Albert*. The mate was ordered to be discharged his ship, and to forfeit wages from April 10th to July 12th inclusive; the master was ordered to take his ship to Brisbane, and there deliver her to the authorities.

34.—*Daniel.*—On the 30th September, 1873, a Naval Court was held at Genoa, under the presidency of H.B.M. Consul, to enquire into a charge of unlawfully refusing to work, preferred against a seaman of the schooner *Daniel*. He was sentenced to four weeks' imprisonment.

35.—*Fairy Queen.*—On the 24th September, 1873, a Naval Court was held at Baltimore, under the presidency of H.B.M. Consul, to enquire into a charge of drunkennesss preferred against the master of the *Fairy Queen*. The Court found that the charge of drunkenness was not proved, and returned the master his certificate.

Enquiry before Court Abroad.

8.—*Bothwell Castle.*—On the 4th July, 1873, an enquiry was held by the Marine Board of New South Wales into a charge of drunkenness preferred against the master of the *Bothwell Castle*. The charge having been satisfactorily proved, his certificate was suspended for twelve months.

Royal Navy and Royal Naval Reserve.

Abbreviations.—Ad., Admiral; A., Assistant; C., Captain; Cr., Commander; C., Chief; Cl., Clerk Cn., Chaplain; D., Deputy; E., Engineer; F., Fleets; H., Hospitals; I., Inspector; L., Lieutenant; M., Midshipman; N., Navigating; P., Paymaster; r., Retired; S. L., Sub-Lieutenant; Sn., Surgeon; St., Staff; N. Inst., Naval Instructor; 1st Class A. E., 1st Class Assistant Engineer; 2nd Class A. E., 2nd Class Assistant Engineer; N. Ct., Naval Cadet; Ng. Ct., Navigating Cadet R. N. R., Royal Naval Reserve.

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—Arthur T. Dew, to *Charybdis;* Ernest A. Simons, William F. D. Walker, Arthur H. Loring, Hon. William Grimston, Scott W. A. H. Gray, Terence H. G. O'Brien, Hon. Hugh Tyrwhitt, Egerton B. B. Levett, Archibald T. Carter, Hon. Patrick M. Hely-Hutchison, Thomas B. Cochrane, Reginald P. Cochran, Arthur T. M'M. Kavanagh, Francis W. Dowell, Robert H. Gubbins, and Henry H. Douglas, to *Bellerophon;* Charles B. C. Macdonald, to *Charybdis.* **N. M.**—Arthur Roughton, to *Northumberland;* George H. Thunder, to *Dasher;* Arthur W. Torlesse, to *Hercules.* **N. C.**—Richard B. Farquhar, Lionel de L. Wells, and David E. B. Carmichael Smyth, to *Bellerophon.* **C. E.**—Charles A. Stratford, 1872, to *Charybdis;* George Tuck, 1857, to *Fisgard* (additional); Henry Brown, 1861, to *Active.* **E.**—George F. William, 1863, Thomas Murray, 1867, and James Bray, 1873, to *Charybdis;* Thomas Baldwin, 1865, to *Repulse;* David Millar, 1863, to *Pembroke* for *Supply;* William J. Fellowes, 1872, and John Runnalls, 1870, to *Northumberland;* Edward Matthews, 1865, to *Pembroke;* Samuel Lloyd, 1868, to *Crocodile;* Robert B. Turner, 1867, William J. Sprake, 1868, John Leigh, 1868, and Charles J. Edge, 1871, to *Active;* John B. Grant, 1870, to *Nassau;* Joseph Hopgood, 1865, to *Pembroke,* for *Flying Fish;* James Steven, 1863, to *Nankin,* for *Egeria;* William Tottenham, 1864, and William Oates, 1871, to *Swinger.* **1st Class A. E.**—Thomas A. Hearson, 1872, to *Fisgard* (additional); Charles F. Gregory, 1867, to *Nassau.* **2nd Class A. E.**—John Keast, 1872, to *Tenedos.* **Cn.**—Rev. Francis C. Lang, M.A., 1872, to *Active;* Rev. Charles J. Corfe, B.A., 1867, to *Himalaya;* Rev. William Dickson, LL.D., 1869, to *Agincourt;* Robert Nimmo, B.A., 1869, to *Bellerophon;* B. C. Pidcock, B.A., to H.M. Fleet. **N. Inst.**—Robert H. A. E. Nelson, 1866, to *Bellerophon.* **St. Sn.**—John Elliott, 1866, to *Bellerophon.* **2nd Class St. Sn.**—George B. Beale, M.D., 1870, and John M. Hunter, M.D., 1870, to *Fisgard;* Henry Fegan, M.D., 1866, to *Active;* Samuel Campbell, M.D., 1867, to *Devastation.* **Sn.**—Robert Nelson, 1861, to *Serapis;* Mark A. Harte, 1861, to *Revenge;* Alexander G. Bain, 1867, to *Northumberland;* Ralph W. Brereton, 1871, to *Hibernia,* for *Nassau;* William H. Patterson, 1872, to *Active;* John Rodgers, 1867, to *Swinger;* Richard B. O'Toole, 1861, to *Lord Warden* (additional); William D. Longfield, 1861, and Charles E. Gray, B.A., M.B., 1871, to *Bellerophon;* William J. Rankin, M.D., 1866, to *Audacious;* Thomas A. O'Donnell, M.D., 1872, to *Active* (additional). **P.**—Henry N. Scaife, 1852, to *Indus;* Henry M. Bernard, 1866, to *Active;* Frederic North, 1870, to *Hibernia,* for *Nassau;* William H. Wichelo, 1867, to *Endymion;* Herbert F. Roe, 1866, to be Secretary to Vice-Admiral Wellesley, C.B.; William H. Richards, 1862, to *Bellerophon;* John E. Sueter, 1863, to be Secretary to Rear-Admiral Hancock. **A. P.**—George A. Hoskyn, 1871, to

Crocodile; John Watts, 1865, to *Asia;* Frederic M. Aylen, to *Jumna;* Gabriel Beer, 1866, to *Cambridge;* Robert M. Pearson, 1870, to *Asia;* Frederic H. M. Whitfield, 1870, to *Active;* Charles F. Graham, 1867, to *Northumberland;* Alfred N. C. King, 1865, to *Penelope;* George A. Johnston, 1870, Arthur K. Tuson, as Secretary's Clerks, and William Maclean, to *Bellerophon;* William J. Hubbard, to *Northumberland;* John Carlisle, 1865, to *Asia;* James G. Gordon, 1871, to *Vanguard;* William Allman, 1869, to *Ariel* (in charge); Thomas Guard, 1870, to *Swinger* (in charge); Henry G. W. Terry, 1870, to *Excellent.* **Cl.**—Denham R. Kelsey, to *Bellerophon.* **A. Cl.**—John C. Bartlett, to *Active.*

RETIREMENTS.—**C.**—Gerard J. Napier, 1856; Richard Purvis, 1857; James M. Bruce, 1862; John F. Ross, 1862; Shute B. Piers, 1863; David Miller, 1863; John L. Perry, 1865; Hon. Maurice H. Nelson, 1866; Charles F. F. Boughey, 1866; Francis R. Purvis, 1866; Arthur J. Innes, 1867; Robert A. Parr, 1867; Charles D. Lucas, 1867, V.C.; Horatio L. A. L. Maitland, 1867; John W. Pike, 1868; Thomas H. B. Fellowes, 1868, C.B.; Louis H. Vesturme, 1868; Ralph A. O. Brown, 1868; Robert O. Leach, 1869; Arthur W. Gillett, 1869; Henry M'C. Alexander, 1869; Arthur Morrell, 1869; James H. Bushnell, 1869; Valentine O. Inglefield, 1870; Albert H. W. Battiscombe, 1870; George Palmer, 1870; Charles J. Bullock, 1870; Edward B. H. Franklin, 1870; Henry M. Miller, 1870; William H. Annesley, 1870; Hon. John Carnegie, 1870; John P. J. Parry, 1871; Edward F. Lodder, 1871; Henry L. Holder, 1871; Charles F. Walker, 1871; Frederick W. Hallowes, 1871; Hon. Francis L. Wood, 1872; Algernon G. Wootton, 1872; Richard M. Blomfield, 1872; Thomas T. Phillips, 1873; Seymour Curtis, 1873. **Cr. with rank of C.**—Edward Nares, 1860; Hon. Ernest G. L. Cochrane, 1860; William H. Pym, 1861; Frederick Harvey, 1861; John B. Scott, 1861; Hon. Henry W. Chetwynd, 1862; Henry M. Bingham, 1862; George A. Douglas, 1862; Henry B. Johnstone, 1862; Charles G. Nelson, 1862; William S. de Kantzow, 1863; John Burgess, 1863; William W. S. Bridges, 1863; Benjamin L. Lefroy, 1863; George D. Fitz Roy, 1863; Edward S. Meara, 1863; James E. Hunter, 1863; John Liddell, 1863; William Chimmo, 1864; Edward D. P. Downes, 1864; Henry G. Belson, 1864; Henry E. Crozier, 1864; Edward F. Kerby, 1864; Josiah H. Hatchard, 1864; Thomas S. Gooch, 1864; Charles A. J. Heysham, 1864; Richard H. Harington, 1864; Robert Sterne, 1865; William F. Lee, 1865; William G. Silverlock, 1865; William F. Johnson, 1865; John B. Butler, 1866; Charles W. Manthorpe, 1866; Charles S. Fitton, 1866; Henry M'Neile Dyer, 1866; George W. Carter, 1866; William G. Annesley, 1866; Charles D. Inglis, 1866; William Menzies, 1866. **Cr.**—Spencer P.

Brett, 1864; William Spratt, 1863; John E. Wells, 1864; Henry T. Boger, 1864; Hugh R. Stewart, 1865; Henry N. Knox, 1865; John Nott, 1865; Francis B. Herbert, 1865; Francis R. Hartwell, 1865; Henry Berkeley, 1865; Thomas Barrett, 1865; William D. D. Selby, 1865; John B. Telfer, 1866; Robert Elliott, 1866; William G. England, 1866; Arthur J. Day, 1866; William Moriarty, 1866; Frederick Hardy, 1866; Hastings St. J. de Robeck, 1866; Henry W. Fox, 1866; Ferrard F. Waddington, 1866; Theophilus M. Kelsall, 1866; Vincent Williams, 1866; James A. Forbes, 1866; Henry J. Hodgson, 1866; Bernard J. Cooper, 1866; Augustus Jacob, 1871.

L. as Cr.—George T. Morrell, 1851; William H. Wright, 1853; Count Eugene G. F. G. Visconti, 1854; George E. Barnes, 1854; George R. Bell, 1855; Charles F. Hill, 1855; Henry R. Stewart, 1855; Frederick C. W. Liardet, 1855; Robert J. Stotherd, 1856; Horatio Packe, 1856; Annesley T. Denham, 1856; James D. Barker, 1857; John D. A. Irvine, 1858; Grantham G. R. Rattray, 1858; William H. Elton, 1859; Alfred J. Cheeke, 1859; George W. J. Aldham, 1859; Henry E. C. Robinson, 1859; John J. Gregory, 1859; Edwin D. Acklom, 1860; William L. Martin, 1860; Charles H. Forrest, 1860; Algernon S. Montague, 1861; Richard B. Lambert, 1861; George Hesketh, 1861; Henry M. Ommanney, 1861; Harington C. Onslow, 1861; Harry F. Yeatman, 1861; George S. Brown, 1861; Thomas G. Price, 1861; John A. H. Trotter, 1861; William E. Miller, 1862; Duncan E. K. Grant, 1862; Charles R. T. Russell, 1862; Courtney A. Hayes, 1862; Berkeley G. A. Belson, 1862; William M. Moger, 1862; George E. Price, 1862; Charles J. Wise, 1862; James W. Gambier, 1863; Frederick Walter, 1863; Alfred A. S. Watts, 1863; John Mc N. Boyd, 1863; Osborn H. Parker, 1863; James A. Boxer, 1863; John W. F. Harvey, 1863; Edward Wickham, 1863. **L.**—Frederic Williams, 1855; Hon. William N. Hood, 1871; Henry D. Mackenzie, 1872; Malcolm de S. Edge, 1872; Lindesay G. P. Godrich, 1868; Cecil B. Palmer, 1869; Richard C. T. Blunt, 1871. **N. L.**—Philip E. Manger, 1870. **S. L.**—Albert J. Mc Ewan, 1869; Charles A. R. Hatton, 1869; Anthony Gwyn, 1870; Clement Royds, 1870; James N. Hart, 1870; Edward F. Creagh, 1870; Cuthbert Druitt, 1870; Hussey C. Vivian, 1870; Frank H. Barnett, 1870; Henry S. Edgar, 1870; Philip A. Parson, 1870; William H. Webster, 1871; Robert P. Ray, 1871; Francis G. Oliver, 1871; Edmond J. Trafford, 1871; Henry D. Archdale, 1871; Herbert D. Phelps, 1871; Edward C. Chippendale, 1871; George F. Raggett, 1871; Henry C. Sloggett, 1871; George L. Sunderland, 1871; Sydney F. Walker, 1871; D'Aprey M. R. Read, 1872; Thomas C. D. Thompson, 1872; John E. G. Bond, 1872; Henry C. A. Morshead, 1872; Henry C. Akaster, 1872; Lionel B. Simeon, 1872;

Hugh P. H. Benwell, 1872; Hon. Harry de V. Pery, 1872; Salis A. Schwabe, 1872; Augustus H. Bampton, 1872. **A. P.**—William B. Inman, 1864; John Watts, 1865; Charles Maxwell, 1870; William E. Davidson, 1868; Lawrence Stewart, 1869; Frederick A. Smith, 1865.

Deaths.—**C.**—William Critchall, 1860, *r.* **Cr.**—John Henderson, 1864, *r.*; John W. Templeman, 1860, *r.*

Maritime Law.

Ship Desertion.—George Harris, a seaman, was prosecuted for refusing to proceed to sea in a steamer, after having signed articles. He went ashore, got drunk, and then abused the captain. There had been considerable difficulty in obtaining a substitute. Harris admitted leaving the vessel, but said he had no intention of deserting. He was committed for fourteen days, with hard labour.—Grimsby Police Court, 25th September.

Enticing a Seaman to Desert.—John B. Schilling was charged with knowingly enticing a seaman, named Henrich Stahl, to desert from the German ship *Annchen*. The boy deserted on the night of the 17th inst., and next day the captain told defendant that his boy had run away. Defendant denied that he had seen the boy. The seaman, a boy, was subsequently seen by Inspector Curtis, who held a warrant for his apprehension, being driven in a cab with a boarding-house keeper's wife to the railway station, where defendant met him. He was arrested, and it appeared that the defendant had connived at his removal, for the purpose of sending him to Glouceser, to join another ship, and that the defendant knew what ship the boy was coming from, because he told witness her name. The Bench inflicted a fine of £10, to include costs, or three months' imprisonment in default.—Newport (Mon.) Police Court, 26th September.

CORRECTING SUN'S DECLINATION.

To the Editor of the Nautical Magazine.

Sir,—I have never seen in any book on navigation instructions for obtaining the sun's declination, at any time, in accordance with the explanation given in the *Nautical Almanac*, although a careful examination of various methods in vogue leads me to the conclusion that it is simple, and has the merit of being direct and accurate. There is only one rule

to learn; and there is no need for troubling the student with directions for forward and backward correction, according as the time is lessor or greater than 12 hours. It may, then, be useful to teachers and students to state the method, and to give an example.

Let D be the hourly difference, as given in the *Nautical Almanac;* d, the difference between the hourly difference against the day of Greenwich time, and that against the following day; t, the time reduced to hours. Then the correction for the declination is $(D \pm \frac{dt}{48})t$.

The term involving d, is to be added to D if the hourly differences are increasing, and to be subtracted from it if they are decreasing.

The correction is to be added to the declination for the day of the Greenwich time, if the declination is increasing; and to be subtracted from it, if the declination is decreasing.

EXAMPLE:—Required the sun's declination at apparent noon, January 16th, 1874, in longitude 26° 54′ 25″ E.

Long. 26° 54′ 25″ E
4
60)137 87 40
$1^h\ 47^m\ 87{\cdot}7^s$

60)22·3^s
60)12·37^m
22·206^h

D = 27″·81

$\frac{dt}{48} = \frac{1{\cdot}01 \times 22}{48} = +{\cdot}46$

28·27
22·21
2827
5654
5654
5654
62)627·8767
10′ 27″·9

App. time at ship $16^d\ 0^h\ 0^m\ 0^s$
Long. in time 1 47 87·7
Greenwich time 15 22 12 22·3

Dec. at noon 15th, 21° 6′ 10″·9
Cor. — 10 27·9
Dec. required 20 55 43·0

It seems preferable to teach an invariable rule for this problem, than to ring the changes upon it that are to be found in the text books. In the practice of navigation at sea, it may not be necessary to correct for second differences, but it is surely desirable that students should learn how to take data out of the *Nautical Almanac* correctly, whenever accuracy is required.

RICHARD STRACHAN.

Meteorological Office.

THE

NAUTICAL MAGAZINE.

NEW SERIES.

DECEMBER, 1873.

HEALTH AND COMFORT ON BOARD EMIGRANT SHIPS.

It is not long since that a sensation was produced by a writer in a newspaper on the other side of the Atlantic by a spasmodic and irrational effusion. It serves the purposes of those who wish to divert the trade from British ships, to run down the accommodation they afford to emigrants, but it is not easy to understand why the press of this country should follow in the wake of their transatlantic brethren: and it was with no little regret that we read in more than one of our London daily papers a *rechauffé* of the amateur contribution to the transatlantic press. A sensation was wanted and was obtained, but at the expense of an exhibition of ignorance which was painful to those who were well informed, and at the risk of damaging our fair trade. To our certain knowledge, the unfortunate articles which appeared in the London papers, running down English ships conveying emigrants to New York, was reproduced in pamphlets and placards, and circulated both at home and abroad, with a view to increasing emigration in foreign ships. This result we can only charitably hope was not the intention of the writers of the articles we have referred to. In order that we might be satisfied as to the health and comfort of ships carrying emigrants under the British flag, we despatched a special commissioner to make the journey, and to give us a straightforward and unsensational statement of his observations and experiments. We did not choose an "Amateur Emigrant," nor did we choose a professional sailor. Believing that the vital

points connected with the carriage of emigrants resolve themselves into a question of regard for health and safety of life, we selected a medical man, a physician, of known standing and repute, to make the passage to New York and back; and in order that we might be fully and fairly advised we did not select one of the latest and best of our emigrant steamers. We wished to be informed of the sanitary arrangements of the ship, the amount of ventilation in the steerages, and the supply of food, as well as of the condition of emigrants, when landed.

The result of our inquiry is, that the ventilation may compare very favourably with most of our large public buildings ashore, and even with private dwellings. The result, as embodied in the report we have received, is as follows:—The upper steerage was situated in the middle and fore-part of the ship, on the same deck as the cabin berths, was divided into three compartments, separated by bulkheads; the single men occupying one of the compartments. The lower or orlop deck was not used. The space allotted to each individual was that prescribed by Act of Parliament—viz., 15 square feet; the height between decks being about $7\frac{1}{2}$ ft., thus giving to each a cubic space of 113 ft. The hospitals and water-closets were on the upper deck, and were in a very satisfactory condition. Besides this upper deck, there was an additional or hurricane deck, available for fresh air and exercise. The temperature in the different steerages were carefully taken *every* night, and was found to vary from 75° to 86° Fahr.; the temperature on deck varying from 70° to 75° (the weather being very warm); the average difference between the steerages and the upper deck being about 9°, not an excessive difference.

It is well known that the injurious effects of air vitiated by respiration, depend not only on the carbonic acid evolved, but also on the amount of organic matter constantly given off, both from the lungs and from the skin of the occupants. As, however, the carbonic acid is in a pretty constant ratio with the organic matter of respiration, by determining the amount of it in a given space, we get a good index to the other impurities. Our Commissioner, therefore, took a sample of the atmosphere of the steerages *every* night, and analysed it, in order that our readers might be accurately advised of the amount of carbonic acid present.

The result of the analysis gives 1·185 parts of carbonic acid to 1000 of air. All the samples were taken *inside* the bunks, close to the bedsides, at about midnight, or two hours after the passengers had retired, and when the ventilating apparatus would have shown defects, had any existed.

On one night, specially, our Commissioner found the following quantities:—In the aft steerage, 1·03 vols. of carbonic acid in 1000

vols. of air, in the middle steerage 1·84 vols., and in the fore steerage, 1·92 vols., thus giving a total average of 1·4 vols. of carbonic acid in 1000 vols. of the air from the three steerages. It may be observed that the carbonic acid in the fore steerage, on this occasion, is considerably in excess of that in the other two steerages; and this is accounted for from the fact, that this analysis was made on a night, when, owing to a strong head-wind, with a high sea running, it was impossible to keep the ventilator in the bow of the ship open, and the sample was taken immediately under the part where the ventilator ought to have been acting. Our commissioner thought it wise to make a special analysis on such an occasion as that afforded by the closing of the fore ventilators, and we think he did wisely. Our commissioner has lately had a conversation with Dr. Craig, a gentleman sent over by the United States' Government to report on emigration, and has found that the results recorded above corresponded very closely with those of Dr. Craig.

In comparing this amount of carbonic acid, in the emigrant steerage, with that existing in the open air, and in the atmosphere of large public buildings, our commissioner states that the amount of carbonic acid in pure air may be assumed to be ·4 per 1000, and Dr. Parkes considers that the air of rooms, containing not more than ·6 per 1000 may be considered to be tolerably pure. It is, however, not found generally practicable to obtain so high an amount of purity in dwellings where a large number of persons sleep, as the following examples will show:—

		Carbonic acid in room. Mean amount.
Gosport, New Barracks	(Parkes)	·645 per 1,000 vols.
Chelsea ,, ,,	,,	·718 ,,
Aldershot Military Prison	,,	1·651 ,,
Portsmouth Garrison Hospital	,,	·976 ,,
In a Boys' School	(Roscoe)	3·100 ,,
National School in Leicester	(Weaver)	3·090 ,,
Town Hall, during Quarter Sessions	,,	1·530 ,,
Private house, sitting-room	,,	3·040 ,,
Ditto bed-room	,,	1·400 ,,
Public library, reading-room	,,	2·060 ,,
Girls' school-room	(Pettinfaker)	7·230 ,,

The amount of carbonic acid in the steerages will, therefore, compare, not unfavourably, with the majority of these examples. It must be remembered, moreover, that, in the military barracks, the cubic space allowed per head is 600 ft., and from 1,200 to 1,600 in the hospitals; and that it is much easier to ventilate a large space than a small one.

A paper was read, some time back, by Dr. Rattray, R.N., at a medical society, in which he gave the results of his analysis of the air of H.M. frigate *Bristol*. The results of 150 experiments, during a four months' voyage from the Cape of Good Hope to England, showed the carbonic acid to vary from 4 to 18 parts per 1,000, and, in some of the deeper parts, actually reaching to the enormous quantity of 88 parts per 1,000; whilst the mean amount found was 16 per 1,000. This is certainly an amount of impurity, which may be deemed to be absolutely poisonous, and totally incompatible with any degree of health; almost recalling in foulness the famous Black Hole of Calcutta. In comparison with it, the air of our steerages must be regarded as pure indeed.

We will now say a few words on the actual amount of ventilating space allowed to the different steerages. The ventilation was, as our commissioner reports, obtained from hatchways covered with booby hatches, stairways, ventilating tubes with cowlheads, and a number of oblong spaces, eleven in number, on each side, opening on to the upper deck by the side of the deck-houses. Without entering into any detail of the size of these different openings, it will be sufficient to state that he made a careful estimate of the total area of available ventilating space in the three steerages, without reckoning the scuttles, and found it to amount to 187 square feet. By dividing this space by the number of adults the three steerages carried—viz., 442—it will be found that each person had an allowance of 60 square inches of ventilating space, half of which may be considered as included in inlets, and half in outlets. This is quite as much as is usually allowed on shore, although it is true that, in very rough weather, some of these openings had to be closed.

Our commissioner likewise made many experiments by the anemometer as to the amount of cubic feet of air which usually entered by the ventilators, and found it varied from 150 to 300 cubic feet per minute. Taking a very low estimate, therefore, we are justified in allowing, in calm weather, at least 200 cubic feet of air per minute; multiplying this by half the total ventilating space, 93·5 feet, we find that 19,700 cubic feet of air will enter per minute or 1,182,000 ft. per hour, thus giving to each adult an allowance of 3,000 cubic feet of air per hour. Dr. Parkes considers that on shore 3,000 cubic feet of air is an ample allowance for each adult per hour, and that, with this amount, the carbonic acid can be maintained at ·6 per 1,000. Other observers consider less sufficient.

It may appear somewhat strange that, with 2,676 cubic feet of air per hour, the carbonic acid reached the amount found by our commissioner—viz., 1·4 per 1,000—although even this is not an excessive quantity. It may, perhaps, be accounted for by the fact that, in the

first place, the space being somewhat small, and some of the openings near each other, the incoming air escaped again without thoroughly mixing with the rest of the air in the steerage; and, in the second place, by the samples being taken from the *inside* of the bunks.

Altogether, we are advised that the ventilation was, on the whole, as good as is possible under the circumstances by natural means, and that any further amount could only be obtained at the risk of cold draughts, followed by rheumatism and bronchial affections. We are also advised that in the winter this amount of cold air would be found to be too much, and that the passengers would endeavour to close some of the openings.

The health of the emigrants was remarkably good during the voyage, and, with the exception of measles, which broke out three days after leaving port, and a case of alcoholic poisoning in a child of about ten years old, whose mother administered a considerable quantity of raw whisky to stop sea-sickness, and nearly succeeded in stopping his breathing altogether, there was literally no illness at all.

As for the food, it is extremely doubtful whether the majority of the steerage passengers had ever fared so well in their lives before, either as regards the quality or quantity of the provisions. Coffee and hot rolls and butter for breakfast; excellent soup and good wholesome well-cooked beef and pork (both fresh and salt) for dinner; rolls and tea, or oatmeal porridge for supper; biscuit *ad libitum* between meals: afford an opportunity for padding, which very few of the emigrant class are accustomed to on shore, and which they do not fail to avail themselves of afloat. There is no restriction whatever as to quantity, although the Act of Parliament prescribes only a certain scale. They have what meat, coffee, rolls, and butter are right at meals; and can pass the whole of their available time in stowing away cargoes of biscuit. Some emigrants have, under this treatment, increased 14 lbs. in weight on the voyage, which, in itself, speaks volumes.

Whilst we think a passage in the steerage is very far from possessing the dismal horrors which those attribute to it, who advise it as a good preparation for purgatory, we certainly do not think that to those of the class of life to which scribblers of the "Amateur Emigrant" type usually belong, it would be altogether an elysium; nor would we go the length of saying with a recent writer, that "well-off people sometimes prefer it for the sake of the greater freedom." That is nonsense. The lower class of Irish, Germans, and French, who cross, are not generally noted for the cleanliness of their habits; they do not properly appreciate the advantages of soap and water, or a frequent change of raiment; and, altogether, it must be admitted that there is in some parts a certain odour characteristic of the "great unwashed," which any amount of fresh air fails completely to

dissipate, and which is apt to be rather disagreeable to those accustomed to better things. This, of course, cannot be avoided, but the inconvenience arising therefrom is obviated to a great extent by separating the different nationalities, and carefully weeding out the more respectable-looking passengers and placing them by themselves.

THE VOYAGE OF THE "POLARIS."

THE recent voyage of the *Polaris* to the Arctic regions presents such a remarkable combination of the opposite elements of disaster and success, that the records of the expedition are at once interesting as a narrative, and highly important in connection with the general question of Arctic exploration, and, in this latter aspect, the results achieved may be considered as most encouraging. The original promoter of this American attempt to reach the North Pole was Captain Hall, a man who, although not himself a sailor, had already done good service as an Arctic explorer, having lived for five years among the Esquimaux—accustoming himself to their mode of life, and acquiring their language—with the view of obtaining additional information respecting the fate of Sir John Franklin's expedition. In the course of his researches he made the interesting discovery of an old settlement of Sir Martin Frobisher's, some account of which will be found in Admiral Collinson's edition of the voyages of that early navigator, published by the Hakluyt Society. In 1870, soon after Hall's return to America, he began to agitate in favour of an expedition to try and reach the North Pole, and although the United States Government declined to make the affair a naval one, they practically started the undertaking by the gift of 50,000 dollars and an old, wooden, river gunboat, of 387 tons, called the *Periwinkle*, which was renamed the *Polaris*, and proved, as might have been expected, a miserable vessel for the purposes of Arctic exploration. Hall took with him as sailing-master an experienced Connecticut whaling skipper, Captain Buddington, under whom, as "second master," was Captain Tyson; while Dr. Bessells (a German physician and naturalist, who was in the German Arctic Expedi of 1869) had charge of the scientific department. Morton, who had been Dr. Kane's steward, and subsequently with Hall himself, and Hans Christian, the Esquimaux, whose name is familiar to readers of the voyages of Kane and Hayes, were also of the party, which, crew and all told, numbered only thirty—men, women, and children, of whom eight were Esquimaux.

The *Polaris* left Brooklyn Navy Yard, on June 29th, 1871, and after filling up with provisions at Disko, in Greenland, sailed without encounter-

ing any difficulty or adventure up through Baffin's Bay, Smith Sound, Kane Basin, and into Kennedy Channel to Cape Constitution, in latitude 80° 23′, the extreme point attained by Kane in 1854. Here it was ascertained that the open water to the northward, which Kane conjectured to be the long sought Polar sea, was only an expansion of Kennedy's Channel, to a width of from thirty to sixty miles from east to west, which Hall accordingly named Polaris Bay. Passing through this, which proved to be between seventy and eighty miles in length, it was found that the channel again narrowed to a width of twenty or twenty-five miles, and this newly discovered portion was called Robeson's Straits, in honour of the Secretary of the American Navy, who took a warm interest in the expedition. On the 24th of August, when the *Polaris* had attained without the slightest difficulty the latitude of 82° 16′—a point considerably farther north than had ever before been reached by a ship—she was at last beset by ice. Captain Tyson said he could see, from the masthead, a water horizon to the north-east; but on this point his opinion was controverted by other observers. The extreme visible portion of the lofty western shore of Robeson's Straits was, however, unanimously agreed to be trending to the north-east, and such accordingly is the present limit of our geographical knowledge in this direction. Captain Buddington now considered it advisable to return and winter in Polaris Bay, to the great regret of all on board, who shared Captain Tyson's opinion that it was practicable to push still farther to the northward. But although such a course might perhaps have been feasible in a stronger and better manned vessel, the *Polaris* had been so severely nipped in the ice that we can scarcely wonder at her sailing-master's decision. Accordingly, on the 5th of September, she was taken into "Thank God Bay," on the north-east shore of Polaris Bay, in latitude 81° 38′. On the 10th of October, Captain Hall, who seems to have yielded reluctantly to the retrograde movement, started northward overland with a small party. He did not, however, get further than about the 82nd parallel, at a point on Robeson's Straits, which he called Newman Bay. After his return to the ship, he was seized with a kind of paralysis, and, dying on the 8th of November, was buried on shore, a wooden monument being erected over his grave. On the return of the first portion of the expedition to America—to be presently recorded—sundry insinuations as to foul play, in connection with Captain Hall's death, were mooted in certain quarters. Suffice it to say, that investigation clearly showed these to be groundless.

Upon the death of Hall, the entire command devolved upon Captain Buddington, who appears to have at once abandoned all thoughts of further exploration, and to have decided on getting home as fast as possible. Of course, however, no steps could be taken in this

direction till the following season, and accordingly the *Polaris* remained for the winter in Thank God Bay. In this, the most northerly latitude in which an expedition has ever wintered, the climate was found to be considerably milder than it is several degrees farther south. In June, the plain surrounding the harbour was free from snow; a creeping herbage covered the ground, affording food for numerous lemmings, musk oxen, and rabbits; wild flowers were found in sheltered places, and large flocks of different kinds of birds came up from the southward, while traces of Esquimaux were occasionally discovered. It was also observed that a current, setting to the south at the rate of about a knot an hour, carried the ice—and, curiously enough, some driftwood—down Robeson's Straits, through Smith Sound, and out into Baffin's Bay. On the 12th of August, 1872, the *Polaris* got free of the ice, and started on her homeward voyage. It may naturally be thought that as Captain Buddington was only some forty miles to the south of the extreme point attained the previous summer, he might have now made another attempt to push to the northward, but it must be remembered that the unseaworthy condition of his ship would have rendered such an attempt very perilous, for, when released in Thank God Bay, the pack-ice was drifting down Robeson's Straits with the current just mentioned, and he would have had to battle with this, while watching to catch a clear lead to the northward. To do this with a vessel so leaky, that she could be only kept afloat with the steam-pump, was obviously out of the question. As it was, the *Polaris* was soon beset in lat. 80° 2′, and, having been made fast with hawsers to a large floe, was carried down by the current almost into the North Water of Baffin's Bay, where, on the 15th of October, in lat. 77° 35′, off the northern entrance of Whale Sound, she was so severely nipped that the boats and provisions were got out on the ice, and preparations made for abandoning her. It was a dark night, a heavy gale, with snow from the southward, when Tyson, the second master; Myers, the meteorologist; Heron, the steward; seven seamen, and the two Esquimaux, with their wives and families, having landed on the ice, the ship suddenly broke adrift from the floe, some men who were in the act of getting over the side with difficulty regaining her.

The history of the expedition is now divided into two distinct portions—the respective narratives of those left on the floe, and those who remained with Captain Buddington in the *Polaris*. The former party—that on the ice—state that when day dawned they saw the ship apparently about four or five miles off, and that, as they made the most franctic efforts to attract the attention of those on board, they never doubted she would return and pick them up, and clung to this idea even after they had watched her go into a bay behind Northumberland Island, furl her sails, and blow off steam. Mr. Chester, however, who now

assumed the duties of chief officer on board the *Polaris*, asserts that from the masthead nothing could be seen of their lost comrades. The party on the ice now made desperate attempts to reach the shore, but their endeavours were unsuccessful, and they were glad to regain the floe, with the loss of some stores, and both their boats stove in, one of which they soon sacrificed for fuel; for it would appear as if they soon got separated from the twenty-five tons of coal, which, Chester says, were landed on the ice. The Esquimaux then built three snow huts, and in these, with the temperature uniformly at the freezing point, the party passed the winter, living during the months of November, December, and January on their provisions, and in the latter part of February and March principally on birds and seals, which they killed. In this latter month, the ice showing some symptoms of breaking up, they took to their only remaining boat, and suffered terrible hardships, and the loss of almost all their remaining provisions among the small floes, upon which, although swept by the waves, they were often compelled to haul their boat. Death by starvation, at last, fairly stared them in the face; but the carcase of a bear, which they shot on April 21st, saved them, and soon after they again fell in with seals. On the 29th, the welcome sight of a steam ship assured them that they had fairly reached the sealing ground, and on the following day, when in latitude 53° 35′, and only forty miles from land, near Wolf Island, they were picked up by the sealing steamer, *Tigress*, Captain Bartlett, and taken into St. John's, Newfoundland.

Meanwhile those left on board the *Polaris* also fared badly. As most of the coal had been landed on the ice, they could not get up much steam, especially as the donkey-engine had to be kept continually at work pumping the ship, which was so leaky that they "would not have been surprised to see her go down any moment." The first chance Captain Buddington had, he ran her ashore, on Littleton Island. Here they built a hut, with timber from the vessel, and having carried ashore all the stores, provisions, and coal that were left, passed the winter in tolerable comfort. There was an Esquimaux encampment a few miles off, and these natives proved useful friends, assisting with their dog sledges to bring things from the ship, and supplying the castaways with ready-made fur clothing and fresh meat, in the shape of walrus liver, which saved them from scurvy. In the spring of 1873 they set to work to construct two boats out of the planking of the *Polaris*, and in these they embarked on the 3rd of June, Captain Buddington being in command of one, and Chester, the mate, taking charge of the other. They encountered a severe gale and heavy falls of snow, during which they managed to shoot some little auks, which they ate raw. Every night they encamped on the ice, and made a small fire, with chopped rope and

oil, which enabled them to get a pannikin of hot tea. In this way they held on to the southward, till, on June 23rd, when about twenty-five miles to the S.E. of Cape York, they were discovered by the look-out of the *Ravenscraig*, Captain Allan, a Dundee whaler, making their way across the pack ice in Melville Bay, with the view of trying to reach the Danish settlements. Having been received on board that vessel, Captain Buddington, Mr. Chester, Mr. Morton, and eight others, were subsequently transferred to the *Arctic*, Captain Adams, another Dundee whaler, which arrived with them in the Tay on the 18th of last September.

We are not yet in possession of detailed information respecting the scientific results of the expedition, but as stated in our September number, these are considered by Dr. Petermann, the eminent German geographer, to be "of extraordinary value." The discoveries of the comparatively mild climate of Polaris Bay, and of the existence of a current setting to the south through Robeson's Straits are in themselves most important. Then Dr. Bessells is understood to have made some most important observations. For the first time pendulum experiments were made so far north as latitude 81° 38′, and new light, it is said, has been thrown on the glacial theory. In addition to this, many interesting mineralogical, botanical, and zoological specimens were obtained, though unfortunately, several boxes were lost when the ship broke adrift from the ice-floe. The fact that such important results were achieved by a small and poorly-equipped party in a vessel like the *Polaris*, which was utterly unfit for ice navigation, should operate upon our Government as a strong inducement to send out a properly organized expedition.

It is to be hoped that the Admiralty will not wholly abandon to foreign enterprise a field of discovery which has proved an admirable training-school for the officers of the Royal Navy.

Since the above was written, the *New York Tribune* has published long reports of interviews with those of the crew of the *Polaris*, saved by the *Ravenscraig*, and some fresh light has been thrown thereby on the dissensions between the leaders of the expedition. Captain Buddington makes no secret of his disagreement with Hall, and it appears that after the death of the latter the disputes on board became even still more bitter. At last Dr. Bessells drew up a paper which Buddington signed; it was an agreement for a division of authority, the former to have entire control of the scientific department, and the latter to confine himself to the command of the ship. The document ended with a solemn declaration, which, although it sounds extraordinary, was perhaps not altogether superfluous under the circumstances, to the effect that the signatories were "really earnest in the search on which they had been sent." It is understood

that the United States Government is investigating the whole circumstances of the case.

Tidings have also been received from the *Tigress*, which went in search of the *Polaris*. The place where the latter vessel was run ashore was discovered, and the hut erected by the castaways was found occupied by Esquimaux, who stated that greatly to their annoyance the wreck of the *Polaris* had sunk, and a small iceberg or floe had grounded on the top of it, so that they could not get at her to break her up, and avail themselves of her timbers.

The *Ravenscraig* has returned to Dundee and brought one of the boats which the castaways built on Littleton Island. It is to be deposited in the Smithsonian Institute, Washington. Finally, on October 22nd, the *Erik*, whaler, arrived in the Tay with the last remnant of the crew of the *Polaris* (Mr. Bryan, astronomer; a seaman, and a fireman) who had been transferred from the *Ravenscraig* to the *Intrepid*, and thence to the *Erik*.

THE CYCLONE IN THE BAY OF BENGAL IN JUNE, 1872,

Known as the Balasore Cyclone.

The official report of the Meteorological Department of the Bengal Government on the Cyclone in the Bay of Bengal, in the month of June, 1872, is now before us, and, after a careful consideration of its contents, we can confidently say we have very seldom seen an account of any cyclone so interesting and so clear. A cyclone is a meteorological phenomenon by no means easy to describe in a way interesting to the general reader; but in this instance the able officer who has compiled the official report we are noticing, in addition to a long list of observations and dry details (which, of necessity, must form the basis of, and accompany, any report of this kind), has made a series of remarks, not only on the subject of the particular cyclone under consideration, but also on the phenomenon generally, of such a valuable character that we think we shall, by reprinting several extracts from this extremely interesting report, be doing a service to many a ship master, who has experienced the responsibility of coming up the Bay of Bengal in the months of May and June, with fresh S.W. gales, accompanied by torrents of rain, and a rapidly-falling barometer.

Of the cyclone in question, which is at times mentioned as the Balasore Cyclone, from the name of the place where it struck the land, it is remarked—

"That it was not one of great violence, and was unusually small in dimensions, its radius, probably, never exceeding forty or fifty miles; the vortex, it is calculated, was formed on the night of June the 29th, or the morning of June the 30th, at or about lat. 19° 50′ N. and long. 89° E. For some time after its formation, it seems to have been almost stationary. It moved afterwards with a velocity of about ten miles an hour, as it passed the Pilot Ridge, between 8 p.m., and midnight of the 30th. It advanced in a northerly direction very slowly from midnight, retarded by friction with the land, turning round to the westward along a path with less resistance, with probably a smaller radius. It increased in extent and velocity of propagation, as it moved over a freer course towards Balasore.

"The following table shows the approximate track of the centre :—

June 30,	10 p.m.	20° 40′ N.	87° 55′ E.
	Midnight	20° 55′ ,,	87° 50′ ,,
July 1,	8 a.m.	21° 8′ ,,	87° 45′ ,,
	8.30 a.m.	21° 9′ ,,	87° 10′ ,,
	11 a.m.	21° 7′ ,,	86° 45′ ,,

"It is probable that, previous to the formation of this vortex, another distinct vortex had been formed on the 28th, in about the same place—viz., lat. 19° 50′ N., long. 89° E.—but it appears to have been almost stationary, and to have broken up on the morning of the 29th."

This cyclone cannot, therefore, according to the foregoing extract, have travelled over much more than 300 miles of sea; neither does it appear to have had any very remarkable speciality, except the very high cross sea which accompanied it—a sea, reported "never to have been equalled in the Bay of Bengal."

The indications mentioned of the probable formation of a cyclone, in the north of the Bay of Bengal, during the months of May and June, refer more especially to observations recorded at the various ports, &c., viz. :—

"I. The barometer falls steadily for some days round the north of the bay. The fall occurs first to the south-east, at Chittagong and Akyab, and afterwards at Saugor Island, Cuttack, and Calcutta. The barometer at Saugor Island ranges lower than the barometer at Calcutta (normally at this season it ranges higher).

"II. At Calcutta, the winds become light and variable, from S.E., round to N.E. As the disturbance increases, masses of clouds drift from E.N.E. or N.E., and as the storm approaches, showers are frequent and the wind blows in gusts.

"III. At Saugor Island the winds are at first light and variable, working round from S.E. to N.E. As the disturbance increases, and as

the storm approaches, the barometer continues to fall steadily; the wind increases in force, with squalls from the N.E., and masses of clouds float rapidly from the same direction. Outside there is a heavy southerly swell.

"IV. At Cuttack, or False Point, the winds are first light and variable, from E.N.E., working generally round, through north to west, and W.S.W. As the storm approaches, the wind increases in force, with squalls from W. and W.N.W.

"V. At Chittagong, the winds are light and very variable, mostly from S.E. and N.E.

"VI. At Akyab the winds are light at first, and saturated with moisture, mostly from S. and S.E. As the disturbance increases, the wind increases in force, and works gradually round from S.E. to S. and S.S.W.

"VII. In the bay, along and south of a line drawn from about False Point to Cheduba Island, south-westerly gales, accompanied with torrents of rain, prevail. Standing northwards, the barometer falls, and rises when standing southwards."

The inference drawn from the above data is that—

"Under the circumstances above specified (III.) it appears unwise for ships, in a good anchorage at Saugor, to put to sea. The great danger is that they may be caught in a cyclone, before they have got sea-room to avoid it. Moreover, the pilot vessels will, under the circumstances, be generally off their stations, and ships will be unable to land their pilots. It should be remembered, also, that generally the worst part of a cyclone is the heavy cross sea which accompanies it. In the late cyclone it was this tremendous sea, which is reported never to have been equalled in the bay, which did such damage. It is accounted for by the long-continued gales from the S.W. This danger would be avoided by not putting to sea until the weather improved. From (VII.) the following would appear to be a safe rule:—*Ships coming up the bay in the months of May and June, with fresh south-westerly gales, accompanied by torrents of rain and falling barometer, should not press to the northwards until the weather improves, and the barometer rises steadily!*"

The disputed question is here raised as to the prudence, or otherwise, of leaving an anchorage more or less safe, and going to sea. But on this question hangs a preliminary question, viz., what is a safe anchorage when a cyclone is threatening? There can be little doubt, we think, that Saugor Roads is far from a convenient place to select for riding out a cyclone, at anchor; but Saugor Roads has this great advantage, that the banks would break the sea rolling in from the bay to a very considerable extent, and, once being in Saugor Roads, the alternative of going to sea from Saugor Roads is, we think, quite as bad, if not worse,

than riding there. The danger of being caught on a lee shore off the delta of the Ganges, with all the interminable series of banks which surrounds it, is so great, that with good ground tackle we should prefer to try riding at anchor, especially if provided, as all ships there ought to be, with a patent vulcanized Indiarubber spring, or buffer, such as are supplied to the lightvessels at the Sand Heads. We may in our preference for riding out a cyclone in Saugor Roads be wrong; but on the other hand, so many vessels have been lost by going to sea (on this occasion two) that we should like to see the other alternative tried more often especially as the improvements in ground tackle have been very great, notably in anchors. Seeing also that, as under the new Act the quality of chain cables tested must be infinitely superior to any tested under the old Act, the chances of riding out have been materially enhanced. The report we are reviewing does not state how many vessels in Saugor Roads rode out in safety this cyclone; but, at any rate, we gather that the *Foam*, pilot vessel, and the s.s. *Madras*, did so successfully; and, further, we do not find any mention of a single casualty in Saugor Roads, and, as none are mentioned, we have only to hope, and are only reasonable in assuming, that none happened.

A master electing to try riding it out at anchor would, of course, as an intelligent being, use every ordinary precaution, such, for instance, as sending down as much top hamper as possible, veering out all the cable he has on board before the cyclone commences, &c., &c., and thus spare sailors the melancholy spectacle presented to us last year, at another port, in the Bay of Bengal, of seeing some eight or nine vessels on shore, many of them with topgallant and even royalyards aloft, and some with discharging derricks up.

But to return to the Balasore Cyclone: one vessel, the *Sophia Joakin*, probably from her dangerous proximity to the lee shore, had to make a fair wind of it. On this circumstance, the reporting officer observes that "running round a cyclone is always dangerous, more especially in those of small radius, and it is liable to be forgotten that the *winds do not revolve round the vortex in circles, but along in moving spirals, so that a course before the wind must inevitably bring a ship sooner or later to the centre!*"

He then proceeds to finish an extremely interesting report, by saying, "I wish to draw particular attention to the following modern development of the laws of cyclonic storms. Disregard of this law may lead, and has led, to many losses at sea. 'The direction of the wind, specially at a distance, is far from being at right angles to the bearing of the centre. The wind does not revolve round the vortex in circles, but along incurving spirals, differing two, three, or more points from the tangential circular directions.' For example, a ship running up the bay with a S.W. gale,

squalls, torrents of rain, a barometer falling rapidly, and every appearance of a cyclone, has no right to conclude that the centre bears N.W., and that therefore a north or N.N.E. course is a safe one. The centre, if at a distance, may bear north or N.N.E., and a northerly course may run the ship into it, particularly as it may be then almost stationary. 'The safest course seems to be to lie to, and watch the barometer and wind till the bearing of the centre be known with some certainty.' In this instance, the barometer generally rose when standing to the S.E., and fell when standing N.W. This was the experience of all the fleet to the S.E.

"It must be borne in mind that, before any vortex is formed, gales blow towards, and round a considerable belt of low pressure. In determining the changes of position of the centre of a cyclone from the veering of the wind, it must be borne in mind that the direction of the currents is not round a circle, but in a spiral, differing about two points or more from the circular direction, although close to the centre, the direction is probably more nearly circular. I use the following rule for the Northern Hemisphere:—To find the bearing of the centre, *stand with your face to the wind, and measure round to your right hand side, about ten points (not eight)*. When the centre is at a distance, it may bear eleven, twelve, or thirteen points from the direction in which the wind is blowing. *For the Southern Hemisphere the ten points would be measured round to the left!*"

"When a ship cannot get out of a cyclone, and is obliged to lie to, the well-known rule is:—When in the right hand semi-circle, heave to on the *starboard tack*, and when in the left hand semicircle, heave to on on the *port tack, in both hemispheres*. A ship heaving to on the wrong tack in a cyclone must drift into the centre, as it passes, and be taken aback by the veering of the wind."

The above extract reminds us of a pamphlet, which quite agrees with the report before us, published some two or three years ago, "On the Incurving of the Wind in Cyclones." It was written by the late Captain Douglas Wales, Harbour-master of Mauritius, and we noticed it at the time. We were much grieved, not long since, to see his death announced. It is with pleasure we take the opportunity of mentioning the great interest he took in the study of cyclones and the law of storms generally, and, with sincere regret, that we have to record the loss that practical seamen have sustained by his death.

OUR GREAT PORTS.

Southampton.

Various accounts have been given of the origin of the name of this port. Geoffry, of Monmouth, ascribes it to the death of a Roman, named Hamo, who was killed on the margin of Southamptor water, and hence the spot was called "Hamo's-Port." Others derive it from the river Anton. But the true derivation seems more likely, as some assert, to be from the Saxon words "Ham," meaning a house, and "Tun," a town. In the Saxon Chronicle, *temp.* 873, it is called "Hamtune," and "Suth Hamtune." In Doomsday Book, *temp.* 1080, it is termed, "Hantone," and "Hentun." That volume states it to be a burgh which contained seventy-nine men in demesne, who paid seven pounds of land-tax; and that it had been paid since the time of Edward the Confessor. He reigned from 1041 to 1066. From that circumstance it would appear to have had a very early Charter. The first known is that of Henry II., and is only a confirmatory one, indicating an earlier one of creation. Others were subsequently granted by Richard I., John, Edward II., Edward III., Henry IV., Henry V., and Henry VI. Under the Municipal Corporations Act, passed 9th September, 1835, it was divided into five wards, having ten aldermen (including the mayor), and thirty councillors. It has returned two members to Parliament since the time of Edward I.

Regarding its general history, many interesting details might be recorded, were space available to do so. Old writers, such as Ross of Warwick, give it a high antiquity, fixing its origin some centuries before the Christian era. Certain it is that the Roman settlement of Clausentum was situated about a mile to the north-east of the present town, at a spot called Bittern Farm, where relics of the same have been found, in the shape of pottery, bricks, urns, coins, &c. By some it is supposed to have been created to overawe a native, or British camp. The first authentic record is that found of the Saxon period, above-mentioned, and it was therein termed a long-established and important town. The Castle was erected by the Saxons, on a mound; and it was attacked by the Danes in the year 837, but they failed to reduce it, showing its early strength. It was repeatedly the scene of the ravages of Danish invaders. In 980 it was plundered by them, and in 994 it formed their winter quarters. Here it was that the famous rebuke of Canute to his courtiers is said to have been administered; and Canute's Point, Road, and Palace are pointed out to this day. In the 11th century it suffered from the Norman incursion. Then it was that Bevis, the famous cham-

pion, whose effigy is still to be seen emblazoned on one of the town gates, displayed his warlike powers in resisting that invasion. He is said to have been defeated by the Normans at Cardiff, in the year 1087, at the head of an army consisting of Welsh and Danes. He is the subject of one of those singular and extravagant "romaunts," so popular during the "middle ages." It begins:—

"Sir Bevis, of Hampton, that knyght hyght,
That never was proved a coward in fight,
. . . . . .
Erle he was of Southamptowne.
In Christendome, farre and nere,
Of doughtinesse was not his pere;
Ne none so harde, ne none so stronge,
He loved the righte, and not the wronge."

For some time after the Conquest, the place and neighbourhood appears to have been more distinguished by "religious revival" than anything else. Stephen, however, (1135-1154), in his desire to curb the power of the barons, fortified the Castle in common with others. In the Charter of Convention, nominating his successor, the words "*Munitionem Hamptoniæ*," evidently point to it being a royal fortress. It was distinguished as the landing-place, on two occasions, of Henry II., on his return from France. John seemed fond of the place, and he it was, amongst his other foolish trade schemes, who farmed out the Customs' dues to the burgesses. This arrangement included those for Portsmouth, and the amount he received was £2,000, a considerable sum in those times, and probably about the fourth part of the whole Custom's revenue of the kingdom at that period. At all events, in the year 1580, that assessment only amounted to £14,000. This fact shows the importance of the place in Stephen's time, the maritime jurisdiction of which he extended over the intervening space between Hurst Castle, on the west, and Portsmouth, on the east, within an imaginary line drawn half way across the Solent. The next notable event is the attack made on the town, in 1338, by a combined fleet of French and Genoese. They gained possession for a short time, but the inhabitants rallied and repulsed the intruders with heavy loss. In the year after, the place was greatly strengthened; and, subsequently, Richard II. rebuilt the Castle. As an index of the then importance of the port, compared to others, the contribution which was made, in 1345, to Edward III., when his fleet was formed for the reduction of Calais, will show a foremost place. It consisted of twenty-one ships, having on board 576 mariners. London only sent twenty-five vessels, and Hull sixteen. In 1348, the "black pestilence" broke out, and caused dreadful suffering amongst the population. In 1415 and 1417, Henry V. assembled his armies here previous

to embarkation for France. During the "Wars of the Roses," the Lancastrians were defeated in a skirmish, and Edward IV. came to Southampton, where twenty prisoners were executed. He again visited the town in 1461. In 1512 the Marquis of Dorset embarked here with 10,000 men to assist Ferdinand, the Catholic, against France; and in 1522 the Earl of Surrey took on board of his fleet the Emperor Charles, V. on his return after a visit to Henry VIII. The latter monarch is said to have visited the town in company with Anne Boleyn. He took great pains to improve the defences there; and a brass gun still remains, bearing the following inscription :—

"HENRICVS VIII. ANGLIE FRAN. CIE ET. HIBERN IE. REX FIDEI DEFENSOR—INVICT. ISSIMVS, F. F. M. D. XXXXII H. R. VIII.

His chancellor, Sir Thomas Wriothesley, was made Earl of Southampton, and built a mansion there, which was since burnt down. In 1550, the "Free Grammar School" was founded, and has done good service. For many years, however, its revenues had been diverted, till, in 1861, the Charity Commissioners made a new arrangement with the Town Council. It is now only partially "free." In 1552, the amiable Edward VI. passed through it, and expressed himself highly delighted with the elegant appearance of the town, and the polish of the citizens. Insomuch was this the case that he proposed to form a great mart for merchandise from South Europe at this port. In 1554, Philip of Spain arrived with a fleet of 160 sail, and remained four days, previous to going to Winchester to espouse Queen Mary. Queen Elizabeth visited the town, and it was she who gave an asylum there to the Protestants expelled by the Duke of Alva from the Netherlands. When the plague broke out in London, Charles I. proceeded to Southampton to meet the Dutch Ambassador. When Cromwell seized the reins of power, Southampton refused to acknowledge him, and it was only by a *ruse* that he gained possession of it. In 1665, the plague again appeared, and caused fearful havoc. So bad was it, that the country people, when bringing provisions, deposited them on the side of a culvert, and purified the money they received by fire, before accepting it. From this cause the prosperity of the place decreased to a large extent, and the close of the century witnessed the greatest depression in trade there.

In regard to commerce, this port appears to have suffered great vicissitudes. In olden times it must have been a place of considerable traffic and consequent opulence. So far back as the ninth and tenth centuries this was especially the case. A mint was actually established A.D. 928. In the time of Henry III. it imported more wine than any other port in the kingdom, excepting London, and was literally the only one where canary wine could be imported, till the London merchants purchased the

right from its citizens. The tin trade also flourished, and "stannaries" were established there, for the settlement of disputes arising in that branch of commerce. Is that not a strong example for the creation of "tribunals of commerce" in our own period? The textile manufacture also had a considerable place, and it formed the great mart for linen and woollen goods then. It had "Woollen and Linen Halls" for the accommodation of its merchants. These structures are said to have been built in a very good style of architecture. This flourishing state of things lasted until the disastrous prohibition of the export of wool took place, in 1337. The shipping was also considerable then; and the cause of a rupture between England and France was the detention of some Southampton ships by the latter power. Her extensive jurisdiction over the neighbouring ports led to frequent disputes, legal and otherwise. Lymington rebelled against this, and collected her own dues; but, on a case being taken to court, a fine of £200 was inflicted. It occurred in the time of the second Edward. This success does not always appear to have been enjoyed, for, in the time of Edward III., an offer was made to him by the town to be allowed to collect those dues still, on consideration of the amount of shipping furnished for his assistance. In 1854, the wool trade was again revived. Winchester, which had been distinguished in the time of the Roman emperors as having a woollen manufactory for their use, was, in that year, made the mart for it, and leather, &c. Southampton was naturally the port for shipment of these commodities. Again, in this line, a great development was effected, forty years later, by opening business transactions with the west of Europe. About this period a singular incident occurred, which indicated the reputation enjoyed by the port in foreign lands. A Genoese merchant, desiring to make it the store for his wares, was assassinated, it is said, by the emissaries of London men, who were jealous of the success of the place. As already stated, however, the time of reverse arrived. This was ushered in by the breaking out of the great plague of 1665. The greatest depression prevailed for nearly a century afterwards, and it was not till the middle of the eighteenth century that things began to look a little brighter in respect to business. In 1747, 1770, 1773, and 1776, Acts of Parliament were obtained to improve the streets, make waterworks, and also to regulate the treatment of the poor, and define and incorporate the parishes. Towards the close of the last century, great improvements were obtained in the roads; and, in 1803, an Act was granted for the improvement of the quays, and better the accommodation for the shipping. Various additions have been made from time to time thereto. In 1832 the Royal Victoria Pier was erected, whereat the various home-trade passenger boats find a berth. The town quays extend for 330 feet, and 475 feet, respectively, at that point. These works are under the manage-

ment of "The Southampton Harbour and Pier Board," and their able engineer, Mr. Skelton. This is the "harbour authority," having charge of the buoys, booms, and lighting of the port, but it has no jurisdiction within the docks. Vessels entering therein have, however, to pay the Town Board a certain amount for harbour dues. There are no public wharves on the river Itchen. There is only a public "Hard," or landing place for boats, called "Cross House Hard."

The docks belong to a company; they are not very extensive, but are extremely convenient, and suitable for the kind of trade now done. They may be entered at dead low water, which is a rare facility, and may be said to form the *beau ideal* of what docks ought to be in this fast age. The Act of Incorporation was obtained in 1836, and the first stone was laid in 1838.

Their dimensions, &c., are:—

Year opened.	Name.	Depth on Cills. (O.S.T.)		Width at Entrance.		Water Area.		Lineal Quayage.	
		Ft.	in.	Ft.	in.	Ac.	Yds.	Miles.	Yds.
1842	Tidal Dock or Basin ...	31	0	150	0	16	0	0	1200
About 1854	Close Dock	29	0	56	0	10	0	0	1000
	Total Docks ...					26	0	1	440
	Graving Docks:—								
—	Western	20	0	66	0	346 ft.	}	Length from gates to head.	
—	Middle	14	0	51	0	282 ,,			
—	Eastern	26	0	80	0	475 ,,			

Other depths may be thus given:—

	Tidal Dock.	Close Dock.
High-water neaps	27 ft.	25 ft.
Low-water neaps	18 ft.	—
Depth in dock	—	27 ft.

There are four jetties in the "close dock," for refitting, and at the western end an entrance appears, as if made for a future dock. Upon the "hard" adjoining the company have ample space for the erection of such, when deemed necessary.

The dry docks are of great use to the large steamers of the "Peninsular and Oriental," and other "lines." The water can be pumped out, by powerful steam engines, at the rate of 120 tons per minute. They can

accommodate the largest tonnage afloat. Every convenience in the way of gear is provided at all the docks. The transit sheds, and other warehouses, are well adapted for the despatch of business. A large warehouse, or shed, 600 ft. by 72 ft., has recently been built to meet the increased wants of the port. An extension of the "South Western" railway comes alongside, affording passengers the privilege of being "spirited" off to London in about three hours from landing, if desirable. The facilities of this port may be illustrated by a short extract from a local newspaper:—"The *Oneida*, Brazil mail steamer, reached Southampton on the 6th, and without waiting in the river, steamed right into the great tidal basin of the dock at *dead low water*, 1.30 p.m. She landed 934 bales of cotton, 601 bales of tobacco, 509 bags of coffee, and a miscellaneous cargo, together with her passengers and mails. All the goods were out by 11 p.m. the same night."

Preliminary works have been commenced to extend the quay space to meet the growing trade. The accommodation for landing foreign cattle is greatly improved, and the premises have been sanctioned by the officers of the Privy Council. The jetty, in the outer dock, is being rebuilt, and adapted for screw boats, instead of paddle ones. The new dock works will be pushed on, and the first part of the extension will be a quay, 1,500 feet long, on the right bank of the river Itchen. It will have a depth of 30 ft. water at low springs, and will be supplied with all modern appliances to suit shipping. It will form the side of a future dock of 30 acres. The quay is expected to be finished next summer, and will be of the greatest advantage to vessels "calling" and leaving at any time or state of tide. The advantage which the port has over others is greatly enhanced by the singular fact that a double tide rolls into Southampton water. That is to say, owing to the position it holds, from the Isle of Wight being at the mouth of it, a reflux takes place, which gives it a "flood" and "ebb" twice for every ordinary tidal wave.

The following statistical tables will show, in a forcible way, the actual position the port holds, and has held, in regard to population, shipping, traffic, &c.:—

The population numbered—

In 1801	... ...	8,000 persons.
,, 1811	... ...	10,000 ,,
,, 1821	... ...	14,000 ,,
,, 1831	... ...	19,824 ,,
,, 1841	... ...	26,900 ,,
,, 1851	... ...	35,305 ,,
,, 1861	... ...	46,960 ,,
,, 1871	... ...	54,057 ,,

The foreign trade, inwards, in shipping, amounted to—

In 1847	... ...	412 vessels ...	92,880 tons.
,, 1852	... ...	523 ,, ...	141,771 ,,
,, 1862	... ...	840 ,, ...	300,511 ,,
,, 1872	... ...	1,393 ,, ...	616,881 ,,

The same trade, outwards, was—

In 1847	... ...	378 vessels ...	86,884 tons.
,, 1852	... ...	495 ,, ...	144,527 ,,
,, 1862	... ...	784 ,, ...	284,653 ,,
,, 1872	... ...	1,233 ,, ...	534,138 ,,

The colonial trade, inwards, showed—

In 1847	... ...	309 vessels ...	66,281 tons.
,, 1852	... ...	348 ,, ...	76,147 ,,
,, 1862	... ...	316 ,, ...	62,072 ,,
,, 1872	... ...	385 ,, ...	127,532 ,,

The same business, outwards, scored—

In 1847	... ...	334 ,, ...	71,092 tons.
,, 1852	... ...	371 ,, ...	81,197 ,,
,, 1862	... ...	346 ,, ...	65,662 ,,
,, 1872	... ...	403 ,, ...	141,236 ,,

The coasting trade, inwards, fetched—

In 1847	... ...	1,743 vessels ...	177,938 tons.
,, 1852	... ...	1,748 ,, ...	174,682 ,,
,, 1862	... ...	1,656 ,, ...	217,461 ,,
,, 1872	... ...	1,094 ,, ...	222,258 ,,

The same trade, outwards, sent away—

In 1847	... ...	1,446 vessels ...	75,256 tons.
,, 1852	... ...	1,160 ,, ...	55,155 ,,
,, 1862	... ...	846 ,, ...	39,779 ,,
,, 1872	... ...	663 ,, ...	46,332 ,,

The vessels registered were—

In 1847	... ...	282 vessels ...	14,765 tons.
,, 1852	... ...	286 ,, ...	15,835 ,,
,, 1862	... ...	293 ,, ...	26,150 ,,
,, 1872	... ...	260 ,, ...	34,828 ,,

The ships built were—

In 1868	... ...	7 vessels ...	850 tons.
,, 1870	... ...	6 ,, ...	252 ,,
,, 1872	... ...	5 ,, ...	960 ,,

The Customs' duties collected were—

In 1830	... ...	£60,000
,, 1840	... ...	78,000
,, 1859	... ...	127,072
,, 1870	... ...	85,026
,, 1872	... ...	94,421

To give an idea of the items, mark that, in 1870, the amounts were :—

On Tobacco	... ...	£42,009
,, Sugar	... ...	18,322
,, Tea ...	... ...	1,867
,, Spirits	... ...	11,716
,, Wines	... ...	9,174
,, Sundries	... ...	1,988
	Total	£85,026

A considerable amount is assessed here on passengers' baggage, which occasions great trouble, both to the revenue officers and the public.

The amount collected for Trinity light dues was—

In 1859 ...	... ...	£4,860
,, 1862 ...	... ...	3,977
,, 1870 ...	... ...	7,041

The numbers of crews and seamen shipped and discharged in the foreign going trade were :—

	Crews.	Men.
In 1859	397 ...	28,799
,, 1862	378 ...	26,343
,, 1872	304 ...	23,447

The ancient fame of this town for manufacturing skill does not appear to be sustained in these "degenerate days." It is true there is a sugar refinery, and, besides the domestic art of coachbuilding, there are pretty extensive works for turning out marine engines at Northam, &c., but, otherwise, there is nothing of importance to note. It is true that a few years ago a bold attempt was made to build first-class iron ships, but the keen competition of the northern ports has, apparently, extinguished the

effort, as a reference to the statistics above will indicate. The imports are principally confined to West Indian and Brazilian produce brought by the mail packets; and the exports to Manchester, and goods of other inland places, transported by the same means. Coastwise, there is a considerable quantity of coal brought, principally for the use of the "liners;" and also a quantity of Irish produce. The great shipping business is, however, in the general passenger trade, and in emigrants. The great "lines" of steamers which sail regularly, or call, are: "Royal Mail," to West Indies and Brazils; "Peninsular and Oriental," to East India and Mediterranean; "Union" line, to Cape of Good Hope; "Java" line, to Java, &c.; "North German Lloyds," to United States; "Hamburgh Company," to America; "London and South-Western Company," to France, &c.; "Isle of Wight Company," to Ryde, &c. The Irish boats, to Ireland, London, &c. The arrival and departure of these "leviathans" of the deep are of daily occurrence. The foreign boats alone afford a large business, the "North German Lloyds" having about 40,000 tons afloat. But it is the British "lines" which surpass in extent. Take, for instance, the Peninsular and Oriental "boats." The extent of their number, tonnage, and value, is something enormous, and form a fleet that would do honour and good service to a second or third-class State. In 1841, a capital of one million was deemed sufficient, with a supplementary stock of £500,000. It was not till 1847 that this resource was employed. Seven years later, however, authority was obtained to raise another million, making two and a half millions, made up of 50,000 shares of £50 each. Debentures and loans have now stretched the capital to nearly four millions. During its whole existence the company has cleared for its shareholders an average return of 9½ per cent., which cannot be deemed altogether unsatisfactory. An extract from the twenty-third annual report, in the year 1872, will show clearly its present circumstances:—

	£	s.	d.
Capital and Liabilities	3,788,820	3	9
Assets	4,220,944	0	7
Gross revenue	2,122,756	12	0
Expenditure	1,953,551	16	6

Dividend ... £6 per centum.

The boats covered a total of about 200,000 miles during the period of a year. The postal subsidy to the company is generally close upon half a million sterling yearly. In great national emergencies this company has performed eminent services. For instance, during the Crimean war, its steamers carried 60,000 men and 15,000 horses; and, in the

Indian Mutiny, many regiments were conveyed to the East by it with care and precision. The advantage of being the head-quarters of such a company must be obvious, and stamps Southampton as the largest packet port in the kingdom.

Little more remains to be said, in a sketch like this. The situation of the town is striking and beautiful. Placed on a peninsula formed by the Itchen river and Southampton water—rising on a gentle acclivity—surrounded by lovely landscapes—having a neighbourhood rich in historic and architectural wealth—this port, as a place of residence, is one of the most desirable in the country. The buildings are of a high-class character, and the main streets are most imposing, wide, and cleanly. There are several well laid out parks, which form "lungs" to the town, and, together with its mild climate, render it exceedingly healthy; and, especially so, to the invalid does it afford a means of restoration from decay or arrest of disease.

There are many religious and educational institutions. There is also a Polytechnic. The other public buildings consist of a Custom House, Guildhall, theatre, Yacht Club House, baths, banks, &c. The excursionist may never tire in and around this town amid so many objects of interest. There are Netley Abbey and St. Denis Abbey, the Royal Victoria Hospital, the Isle of Wight, and many other easily-attained places, by rail or by steamer. The only difficulty appears to be in selection. The limits of the port itself are still very wide, it may be interesting to mention, viewed in connection with its ancient extent under the Edwards. It still extends from Portsmouth on the east, and reaches as far as Christchurch on the west.

Great complaints have often been made of the bad railway communication to Bristol and the South Wales district. It is proposed to remedy that now, and several meetings have been held during this autumn to consider the matter. The chairman of the Great Western Railway presided at a meeting, in October last, when it was decided to start a scheme. The first step towards it must be the adoption of the "narrow gauge," which is to be the great developer of traffic and intercourse now-a-days. Once a quick communication is opened up to those thriving districts, a greatly extended traffic will, no doubt, be fostered.

A SOMEWHAT serious strike of seamen took place at Leith, but it terminated by most of the men agreeing to go back to their ships on the owners' terms. During the strike vacancies were filled up from English and foreign crews.

CORRESPONDENCE.

SHIPS' PUMPS.

To the Editor of the Nautical Magazine.

Sir,—We have recently had a New Merchant Shipping Act Amendment Act, giving the Board of Trade increased powers with respect to merchant shipping. But, Sir, the Board of Trade has done much for the Mercantile Marine of Great Britain without the aid of legislation, and it is known, even outside official circles, that great attention has been paid for a long time past to such questions as "ships' lights," "ships' lifeboats," "safety-valves," &c., and I feel so sure it is only necessary to call attention to points where the influence of the Board could be carefully exercised, that I have little hesitation in introducing the question of "ships' pumps."

It is quite extraordinary the number of vessels that are at sea with pumps of the most primitive description, which not only require the exertions of many men to work them, nearly all of which is lost in consequence of faulty construction, but which, after all, throw very little water!

Many ships, again, have pumps so placed that it is quite impossible to get at them if anything goes wrong, or are so imperfectly protected at the foot as to be easily choked.

It is a well-known fact that many vessels, especially timber vessels, leak to such a degree that the pumps have to be kept almost constantly going. It would not be an inaccurate statement to make, that many a timber vessel has floated across the Atlantic on her cargo, and instead of being sailed, has virtually been pumped over. In reality, the sailors are only partially employed as sailors, their principal duty has been to pump. Although many vessels in the above state arrive in safety in consequence of the successful exertions of the crew in pumping, I should like to know in how many cases the crews have become exhausted and the vessels abandoned in consequence, or how often ships and crews have all been lost together. It is notorious that the number is immense; whilst there is no doubt that many vessels might have been saved had they been provided with good pumps, so that the labour of the crew could be made the most of.

I would propose that all timber ships should be required to be provided with a good windmill pump; it is, beyond all doubt, the most efficient means of doing the work. The harder it blows, the faster it works; and the work is continuous night as well as day. Whilst the crew are employed reefing or furling sails aloft, or doing other

necessary work on deck, the faithful windmill goes working on; and when the comparatively small sum of money that the apparatus cost, windmill, pump, and everything complete is taken into consideration, as well as its extreme simplicity, there can be no doubt that it would, in reality, pay the owner to put it into his vessel! He would save the whole cost over and over again in sails and equipments, which would be otherwise lost, because the crew could not be taken from the pumps to look after them, or are too exhausted to do so. I understand that a windmill pump can be fitted complete in almost any port in the United Kingdom for about from £35 to £40.

But, in my opinion, what would have the most beneficial effect would be, that the Board of Trade should invite pump-makers to send full size working examples of their various patents, &c., to an exhibition in London, and offer prizes or rewards for those of the best description; a small working committee could easily examine and report on the whole subject in a very short time.

Many of the requirements of a good ship's pump are obvious—viz., double action; fly wheel; if possible, unchokeable by sand or grain; to pass a cube of at least two inches; to throw the greatest possible quantity of water with the smallest number of men at work, &c.

Then, I think, the pumps should be so placed in a vessel as to be always accessible from the uppermost deck, and that in iron vessels every compartment, exclusive, of course, of the small collision compartments fore and aft, should be provided with a pump.

I believe there would be no lack of exhibitors, that it would be decidedly to the interest of pump-makers to exhibit, and I feel quite certain that many a poor sailor, thereafter, would have good reason to congratulate himself on the beneficial exertions of Government in such a direction.

Through the medium of your valuable magazine, I earnestly desire, Sir, to recommend this question to the serious consideration of the Board of Trade. In my opinion, the most valuable results would ensue in a very short time by the saving of a large number of lives and much property.

I am, &c.,

PUMP AWAY, MEN.

PORT OF CONSTANTINOPLE.

We have received from our esteemed correspondent at Constantinople a very entertaining account of a concert, carried out most successfully by the English residents in the city of the Sultan. We would gladly have

ublished our friend's letter, but our space is of so much importance to
s now, that we can only find room for those things which are of practical
rvice to our readers. Our correspondent's letter speaks very favourably
what English people are doing at Constantinople, and we should
rongly advise our sailor countrymen navigating in the vicinity of the
osphorus to look in upon the hospitable and gay British colony there,
id go to the Literary and Mechanics' Association, where they will find,
s stated in our September Number, all the English periodicals of
portance, including the old *Nautical*.

DEVIATION PROBLEMS.

To the Editor of the Nautical Magazine.

R,—In your October number of the *Nautical Magazine* of 1872, page
)3, I observe a Deviation Problem which Mr. James Gordon says is
ther *new*, or if not new, that it has been *entirely forgotten*.

Now, I must really demur to this, and say, at once, that it is neither
ie nor the other. I am anxious not to hurt the feelings of Mr. Gordon
anyone else in the remarks I may make. I prefer writing anonymously,
it you are quite at liberty to give him my name and address, if needful,
id I must beg him to excuse any little apparent asperities.

The problem is no more new than saying 4 times $1\frac{1}{2}$ is a new way of
itting 3 times 2.

I have had my "Raper's Epitomé" for twenty-one years, and in the
h edition (page 224, par. 676), the problem will be found in, as I
nture to think, a more simple form; it is add together (Log. in his
ork always understood)—

Sine Pol. Dist. or Cos. Decn.,
Sine Hour Angle,
Sec. Altitude,

e sum being Sine of Azimuth.

Neither is it forgotten. I have used it at sea for several years, at
ast once a day in clear weather, and frequently four times. Raper's
og. Tables are the best I ever used, and have a column for Arc in
ne. It is necessary in this little Problem to take the Logs. out to
ur places of Decimals only, which can be done at the same time as
orking the Hour Angle, and occupied only about a square inch of my
per.

As I sailed principally in the Tropics, the region of high altitudes, I
d not use it for finding the Deviation, although with a dumb card, and
properly arranged shadow line, as in some iron ships, it could be
used.

As the use to which I put it, may be interesting to your readers, I will explain.

Having found the Azimuth, 8 points from it was the line of *equal altitude*. This taken as a course in the Traverse Table, with 100′ as diff. lat. the corresponding dep. converted into diff. long. would be the error of long. due to an error of 100′ in the latitude. Divide this by 100 and we get a neat little decimal to be applied to every mile the D. R. lat. assumed, was afterwards found to be in error, or would at once afford a degree of dependence to be placed in the assumed position.

Example.

In about 20° north lat. I find suns Azimuth S. 74° E., which gives the line of equal altitude N. 16° E. or S. 16° W. N.B. This should be put down clearly, as it affords the rule how to apply the correction. North-east meaning that if the ship is found to be farther *North* she must be farther *east*, and *vice versâ*.

In this case a course of 16° and 100′ diff. lat. gives 28′·7 dep., which in 20° north is 30′·5 diff. long; this, divided by 100, gives ·305, or practically, 0′·3 of long. for every mile of error of latitude. With a trifling practice it can be done in a tenth the time it takes to explain it.

This "line of equal alt." is of far more use than is generally supposed. I have on some occasions stood in for the land in the early morning, after being in the offing all night, swayed about by uncertain currents, obtained an observation, got a cast of the lead, assumed a latitude, found time, azimuth, line of equal altitude, and by this and the lead, the ship's position, and squared away all in a quarter of an hour.

Again, I know a line of coast, 60′ east and west, nothing but jungle, no landmarks. With the same plan on coming in from sea, I have identified my position and proceeded.

Many a good ship has been lost in the Black Sea, from not knowing whether they were east or west of the entrance of the Bosphorus, in making the land from the north.

Mr. Gordon seems to think Mr. Towson's Tables were constructed especially for finding azimuths. He may be right, but I always thought their name and use was "Great Circle Tables," which can be used for azimuths, and for so many other purposes, that they would be more rightly named "Spherical Traverse Tables." I found them so useful that my "Epitomé," "Almanac," and "Towson's" always went together for daily practical work. I could say much more in their favour, but must defer it to another time.

I feel certain that Mr. Gordon is an excellent teacher of theoretical navigation and nautical astronomy, but when he begins to teach us the practical application of the theory, my doubts begin. I am not good at

explaining, but if he were to take a delicate prismatic compass and tripod on board a yacht, and stand out in the North Sea some night, and *attempt* to take the bearing of some "second magnitude star," as the North Star is, he would know exactly what I mean.

Sextant observations at night are disagreeable, but compass are almost impossible from various causes.

What is wanted is fine weather, *very* fine, a smooth sea, a ship large enough to prevent excessive motion and oscillation of the compass card, daylight, a methodical way of working, and a knowledge of the subject. If correct time is kept, Towson's Tables are excellent. The motion of celestial objects in azimuth is *greatest* at the meridian; so a small error in time may make a large error in bearing if taken then.

I must not trespass more on your space now.

NAUCLERUS.

ASHORE AND AFLOAT.—A COMPARISON.

We give three tables of lives lost, (1) by railway accidents in the United Kingdom, (2) by shipwrecks on the coasts of the United Kingdom, and (3) by being run over and killed in the streets of London. These tables suggest that the very best place to resort to for security is the sea, even in so-called "coffin ships" in the coasting trade. Now that we get returns somewhat trustworthy from railway companies, we find 1,145 lives lost on railways in the United Kingdom in 1872, as against 590 lives lost in shipwrecks and casualties, foreign as well as British ships, on our coasts in the same year. And, as regards casualties in our streets, London alone gives 118 deaths in the year, or exactly one-fifth of the whole number of deaths of British and foreign seamen and passengers on the coasts of the whole kingdom in the same time. If we were to take London, Glasgow, Liverpool, Manchester, Newcastle, Hull, Bristol, Edinburgh, Birmingham, and a few other towns, it would be proved conclusively that fine days, in which walks can be taken along frequented thoroughfares in large towns, are far more dangerous to human life than the worst storms or the direst casualties on our coasts. And if we were to include the railway casualties as well as the street casualties in one year, we should find that hurricanes, tornadoes, wrecks, casualties, fires, explosions, and collisions at sea, all over the world, result in less loss of life from British shipping than do the ordinary processes of walking and

. riding on land in this our United Kingdom. Poor Jack is not so badly used after all.

TABLE I.

Number of passengers conveyed, and number of persons reported killed upon railways in the United Kingdom in each year from 1849 to 1872, inclusive.

Note.—Each Season Ticket-holder is counted as one passenger only.

Years.	Total number of passengers conveyed (including Season Ticket-holders).	No. of persons reported killed upon Railways.
1849	63,841,539	202
1850	72,854,422	216
1851	85,391,095	218
1852	89,135,729	216
1853	102,286,660	305
1854	111,206,707	223
1855	118,595,135	246
1856	129,347,592	281
1857	139,008,888	236
1858	139,193,699	276
1859	149,807,148	245
1860	163,483,572	255
1861	173,773,218	284
1862	180,485,727	216
1863	204,699,466	184
1864	229,348,664	222
1865	251,959,862	221
1866	274,403,895	215
1867	287,807,904	209
1868	(cannot be given.)	212
1869	312,779,381	321
1870	336,701,800	286
1871	375,409,146	404*
1872	423,147,164	1,145*

* The great increase in these numbers over those of the preceding years, is to be attributed to the fact that previous to the passing of the Regulation of Railways Act, 1871, which came into operation on 1st November, 1871, many Railway Companies did not make returns of accidents to their servants.

TABLE II.

Total tonnage of ships entered and cleared in the foreign and colonial trades, and of ships entered in the coasting trade at ports in the United Kingdom, and number of lives reported lost by vessels being wrecked, &c., on or near the coasts of the United Kingdom in each year, from 1859 to 1872, inclusive.

Years.	Total tonnage of British and Foreign ships entered and cleared with cargoes and in ballast in the Foreign and Colonial Trades, and tonnage of British and Foreign ships entered with cargoes only in the Coasting Trade.	Number of lives reported lost by vessels being wrecked, &c., on or near the coasts of the United Kingdom.
	TONS.	
*1859	39,436,376	*1645
1860	41,692,708	586
1861	43,950,876	884
1862	44,005,799	690
1863	44,286,265	620
1864	44,621,195	516
1865	47,125,446	698
1866	49,860,570	896
1867	51,202,093	1333
1868	51,376,657	824
1869	52,913,320	933
1870	54,940,457	774
1871	59,914,997	626
1872	60,600,175	590

* Returns not complete before the year 1859.

Notes.—In the year 1859, the tonnage of steam vessels entered and cleared was 30 per cent. of the whole; and in 1872, 52 per cent.

The above tonnage, in column 2, represents the aggregate of the separate voyages of all vessels employed in the trade of the United Kingdom, *with the exception*, in the coasting trade, of vessels in ballast, and of those carrying ashes (coal and soap); bavins for bakers' use, bones for manure, bricks, chalk, clay of every description, chippings of granite, fagots, fish alive, flints picked off land, gravel, hay, ironstone, kelp and lime, fresh meat, empty packages, pebbles, chimney and flower pots, made of clay; sand, slates, stones, all British quarried; straw; tiles and pipes made of clay; timber and wood (British) intended for pit props, and sleepers for railways. In consequence of the exclusion of the tonnage of these vessels, no correct proportion of the loss of life to tonnage employed can be arrived at.

TABLE III.

Number of persons reported by the police as run over and killed within the Metropolitan Police District in each year from 1866 to 1872, inclusive.

Years.	Number of Persons run over and killed in the Streets.
1866	102
1867	96
1868	83
1869	128
1870	124
1871	120
1872	118

THE RIVALS—DERBY AND CARDIFF.

Derby has no shipping. This is not literally accurate, but it is accurate in substance; for if we exclude such ships as are to be seen in the toy shops and in the museum, we may say that Derby and the Lowther Arcade, in the Strand, may be put in one category, as regards the importance and character of their shipping and shipowners: and the deductions as to freeboard, &c., that would be necessary to ensure the safe navigation of the ships of both places, Derby and Lowther Arcadia would probably be identical, as they would both be derived from the contemplation of the same type of ships.

Cardiff possesses ships of a different kind from Derby, and the knowledge which has enabled Derby to master the complications of its shipping, is found to be insufficient, also, to enable it to comprehend fully the intricacies of the shipping of Cardiff, and the problems there arising as regards construction, loading, equipment, and manning.

It is not, therefore, to be wondered at that when Derby criticizes Cardiff ships and Cardiff crews, the criticisms are scarcely fair, nor that conclusions arrived at by the inland port are practically of small value to the seaport. This partly arises from another fact, that the

shipowners of Derby are eminently good, and in their opinion the shipowners of Cardiff are pre-eminently bad. The inland port is the residence of the "unco' guid;" whilst the seaport is inflicted with the presence of sinners of the vilest type; and, if miracles had not ceased, would, with several cities, excepting Derby (from a Derby point of view) have justly shared the fate of the cities of the plain. But of all wicked places, Derby places Cardiff first.

We are led to make the above remarks by reading the utterances of Derby, delivered at Aberdeen, in September, and at Portsmouth, in October last. To the inhabitants of Portsmouth, Derby represented that "A Government return, made to the House of Commons, had actually placed Cardiff at the top of all ports in the number of committals of seamen to gaol for *refusing to proceed to sea in their ships upon the plea of unseaworthiness.*"

Now, as the gist of the evangel delivered by Derby to the working men of England is that shipowners and persons who ought to know better conspire to send seamen to sea to be drowned, this complaint that so many seamen are sent to gaol at Cardiff, for refusing to proceed to sea, means, if it means anything at all beyond bunkum (which we doubt), that they were right in refusing to proceed to sea, and that magistrates were wrong in sending them to goal. To put any other construction on the utterances of Derby would be to place the seamen in the wrong; this would be opposed to the Derby point of view, which is, that shipowners and magistrates, and not seamen, are in fault, and are responsible for wrecks at sea.

It is really startling to think that a commission of the peace, above all things English and fair, could do such deeds as to send seamen improperly to prison, but Cardiff has had the courage to justify the conduct of her magistrates. Her allegation is that she is innocent of the misconduct imputed to her; and that Derby is publishing "miniature novels." Cardiff seems to think that the "Return," which Derby quotes, and which was drawn up by Derby for Derby herself, was misunderstood by the people who filled it in, and that it is so incomplete as to be entirely worthless. Moreover, however, taking it as it is, Cardiff thinks that the figures it contains, so far as they are of any value, go directly to disprove the insinuations made by Derby.

Such is the gist of the defence put in by the champion of Cardiff, in the *Western Mail;* the editor of which, with, we think, pardonable warmth, observes, in a leading article, that "We regard it as a matter for regret that, taught by experience, the gross impropriety, not to say injustice, of making haphazard allegations affecting the probity of public men, Derby did not take the trouble to verify the facts upon which she based her accusation." It is a pity that Cardiff gets hot in this way; but

then she makes up for it by a calm analysis of the "Return of crews of merchant ships committed to prison in 1870, 1871, and 1872, for refusing to proceed to sea," and brings out the figures as follows :—

UNITED KINGDOM.—ANALYSIS OF CASES.

Various reasons assigned by the men, for not proceeding to sea, such as, that they were *drunk ashore*, or had overslept ashore, &c.	333
No reason assigned by the men for not proceeding to sea ...	183
No record of men's defences	174
Unseaworthiness alleged by the men	75
Total cases	765

Of the above total of 765,—134 cases belong to Cardiff, and are analysed as follows :—

CARDIFF.

Various reasons, such as *drunk*, &c., assigned	45
No reason assigned	77
No record of defences	6
Unseaworthiness alleged	6
Total	134

The argument herein is, that the "unseaworthiness" column is not large after all; and then, to strengthen this view, the figures as to the unseaworthy cases are marshalled by Cardiff in another way. Thus :—

1st, Cork	15 cases.
2nd, Deal	9 ,,
3rd, Haverfordwest (for Milford Haven)	7 ,,
4th, Cardiff	6 ,,
5th, Falmouth	5 ,,
6th, Swansea	4 ,,
7th, Other ports having less than 4 each	29 ,,
Total unseaworthy cases at *all* ports for *three* years ...	75

But, not content with stating that the "Return" is wrong, and that Arcadia shipowners are not competent to draw a logical conclusion from it, another "Return" is put forward to show that what Derby regards as a "very, very wicked place," is, in reality, the very first port in the kingdom for protecting the lives of sailors. Between November, 1872, and May, 1873, at Cardiff, 15 cases of unseaworthy vessels were stopped by the Board of Trade officers there. The analysis is as follows :—

UNITED KINGDOM.

Unseaworthy.	Seaworthy.	Not surveyed.	Result to men, &c.
7	0	1	Discharged.
1	0	0	Owner prosecuted.
0	3	0	Men committed.
0	2	0	Not stated.
0	1	0	60 tons of cargo taken out.
8	6	1	

Of the whole number given above, six of these cases occurred at Cardiff; and the Cardiff cases, standing alone, are given in the same way:—

Unseaworthy.	Seaworthy.	Result.
0	1	Men committed.
5	0	Men discharged.

Cardiff therefore thinks she and her worthy bench of magistrates are doing what is right: and that they have been most wantonly aspersed. It must be a consolation to Cardiff to remember that she does not stand alone in having been misunderstood and abused. We take off our hat to Cardiff, for we know that in no port of the kingdom have the Board of Trade surveyors and the magistrates done so well. *A bas* DERBY!

PETROLEUM AS A BEVERAGE.—Every one knows that the districts where grapes are grown, of which champagne is made, are not sufficiently large to produce grapes for a fifth of the annual champagne supply. Four-fifths of the champagne drunk is, therefore, quite innocent of any acquaintance with the production of the champagne districts. Much credit is due to manufacturers of wine for having discovered methods whereby a decoction or infusion of gooseberry, rhubarb, plums, and even of turnips (with a judicious addition of chemical flavouring matter) can be passed off as champagne, or Moselle, or sparkling hock; but we are not so sure that credit is due to the discoverer of the method whereby petroleum is made to do duty as champagne. We are nevertheless assured that American mineral oil refiners and brokers sell large quantities of their oil to champagne makers. It is mechanically mixed with glycerine, is then aërated by a soda-water machine, and is technically known as "*Ball Room.*" It produces headache of the very worst description, and severe diarrhœa, and lasting evil effects. A consignment has, it is said, reached England, *viâ* France.

WRECKS IN 1830 AND IN 1871.

THE doctrine of "averages" has taken fast hold of the mind of some philosophers. They affirm that, with proper data, any percentage of human events can be calculated. Given, for instance, any particular month in the year, and any particular race, the surrounding circumstances being equal, an approximate calculation of the number of suicides, likely to occur, can be made. The marriage rate, the birth and death rates, and other contingencies and idiosyncrasies, have not escaped their scrutiny. Without committing the *Nautical Magazine* to entire belief in such an assertion, it is worth while to note, in the present ferment on things maritime, that the percentages of total losses of British ships from wreck, as compared with the number of British ships on the register, are curiously alike, at such wide periods as 1830 and 1871. According to an estimate formed at Lloyds, the total losses of British vessels at sea, in the year 1830, ammounted to 677. So far back, the admirable returns, since so carefully prepared by the Marine Department of the Board of Trade, upon this fearful subject, did not exist. The best authority then available would be "Lloyds." Now, in the year 1831 there is no doubt, for the fact is indisputable, that there were on the British register 22,785 registered ships belonging to the British Empire. There might have been a less number of British registered ships *in existence;* in fact, we may assume that there were less, for the same perfect mode of keeping the registration account, and summarily closing registers of defunct ships, did not then exist as now. There cannot, at any rate, have been more than 22,785 British registered ships in 1830; but there were less. Now, as there was a less number of vessels, the percentage of total losses, compared with total registered ships in 1830, would, of course, be higher than the figures show. Taking, however, the numbers as they are to be found in the records, and the result shows that the percentage of British ships totally lost in 1830 would be exactly 2·92, or nearly 3 in the 100 of British vessels on the registry in that year. If the "Wreck Register" for 1871 be examined, the following results will be found:—

At page 28, there are total losses on the coasts of the United Kingdom for British and foreign ships	398
At page 30, an addition to the same heading is made by collisions	89
Making together	487

Brought forward	487
At page 18 (Table II.), the proportion of all casualties to ships is almost exactly one-seventh foreign to British; therefore, deduct one-seventh from the total losses ...	69
	418
At page 63, the British vessels totally lost on the coasts of British Possessions abroad were	231
At page 75, the total losses of *British* vessels, reported from other parts of the world, were	447
Making in all	1,096

Now, in the year 1871, there were registered in the British Empire 36,867 vessels, therefore the exact percentage of total loss of the year 1871 would be 2·97, or very nearly 3 in the 100; being ·05 only above the percentage for 1830. This is a remarkable resemblance, and certainly tends to confirm the "averages" doctrinaires. It is to be regretted that whilst the *Register* gives the actual number of wrecks and casualties to British and foreign vessels, respectively, on the coasts of the United Kingdom, it does not distinguish the British from foreign, in the "total loss" column, for those occurring on such coasts. Had it done so, perhaps the similarity would have been greater still. It must be remarked here, that the comparison we have just made is of the number of total losses of British ships all over the world with the number of British ships *on the register* in the two years; but it will at once be obvious that this comparison is unfair to the last year we have taken, for we have not borne in mind two most important facts—viz., 1, that the tonnage of individual ships has very greatly increased: and, 2, that the *number* and rapidity of voyages now made by ships is far in excess of anything dreamt of in 1830. If all circumstances were taken into consideration, the percentage of loss would be seen to be much less in the year 1871 than in 1830. The increase in voyages now made by the great increase in the use of steamers, would, probably in many instances, be as 4 to 1 against 1830. Taking an Atlantic round as a specimen, this is clearly so, for the steam "liners" now make a passage in eight, nine, or ten days, instead of a month or more taken up by the old sailing ship of forty years ago.

It is expected that the Alfred graving dock at Melbourne will be ready to receive vessels by the end of this year.

The Chinese merchants at Shanghai are about to send vessels to Japan under the new treaty.

EX-MERIDIAN PROBLEM.

HAVING been frequently asked by officers in our Merchant Service, "Of what use is the Problem in our Examination Papers, known as the Ex-Meridian, or, to find the latitude by an altitude of the Sun, taken near Noon?" My reply has invariably been, to those who do not avail themselves of the many opportunities within their reach, of finding the ship's position, this problem, like many others, can be but of little, or of no value whatever; but, speaking from a somewhat extensive experience at sea, as a navigator, I can truly assert that I have found this simple problem to be most invaluable. And that others may derive the same benefit from the daily use of it that I have experienced during many years, I am induced to forward the enclosed small table for insertion in your useful publication, as you may see fit. The table was originally copied from the pages of the *Nautical* of former years; but not having the work at the present time, I am unable to refer to the volume in which it may be found.

I may briefly state, that my usual practice was always to "work the sights" for the chronometer immediately after breakfast, using the latitude by account for that purpose. This would give me the error of the chronometer, on apparent time at ship, sufficiently correct for my purpose: knowing which, and also correcting for the ship's run, I could obtain a pretty correct hour angle for an altitude of the sun, taken about half an hour, or less, on either side of noon. With this altitude, I found my true latitude by the Ex-Meridian Problem, the calculation of which did not occupy five minutes; and if the latitude thus found differed much from the latitude by account, used in the calculation of the sights at 9 a.m., the table enclosed enabled me to correct the longitude already found from an erroneous latitude, and the ship's position was thus correctly found, without any further calculation. At the end of this letter I will furnish all the calculation required, taking an imaginary case at the entrance of the British Channel, where an error in either latitude or longitude may be productive of much mischief.

I may be allowed to express my regret that this useful little problem ("The Ex-Meridian") is not estimated at its true value among navigators generally, as it is not confined to observations of the sun only, but may be applied with advantage to observations of the stars. On one occasion, when coming round the Horn, from the westward, in the month of May, the sun had not been seen for twelve days, but the stars were visible in patches during the night. This problem was in request every night, in connexion with Raper's "Double Altitude of Different Bodies" (See page 252 of his work, No. 761); and, on the thirteenth day, at 8.30 a.m., the islets of Diego Ramiez were visible from the deck, about three points on the port bow, where they ought to be by the reckoning.

I must apologise for the length of this letter; but I consider it to be my duty to make known the value of those simple methods of finding a ship's position at sea, at other times than noon.

J. F. TRIVETT.

TABLE A.

To be entered with the latitude worked with at the side and the hour angle at the top.

	One Hour.						Two Hours.					Three Hours.				Four Hrs.		Hours.	
Lat.	0m.	10m.	20m.	30m.	40m.	50m.	0m.	10m.	20m.	30m.	45m.	0m.	15m.	30m.	45m.	0m.	30m.	5	6
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2	·13	·11	·10	·08	·07	·07	·06	·06	·05	·04	·04	·04	·03	·03	·02	·02	·01	·01	0
4	·26	·22	·19	·17	·15	·13	·12	·11	·10	·9	·08	·07	·06	·05	·04	·04	·03	·02	0
6	·39	·33	·29	·25	·22	·20	·18	·16	·15	·13	·12	·11	·09	·08	·07	·06	·04	·03	0
8	·52	·45	·39	·34	·20	·27	·24	·22	·20	·18	·16	·14	·12	·11	·09	·08	·06	·04	0
10	·66	·56	·48	·43	·38	·34	·30	·27	·25	·23	·20	·18	·15	·13	·11	·10	·08	·05	0
12	·79	·67	·58	·51	·46	·41	·37	·33	·30	·28	·24	·21	·18	·16	·14	·12	·09	·06	0
14	·93	·79	·68	·60	·53	·48	·43	·39	·35	·32	·28	·25	·21	·19	·16	·14	·10	·07	0
16	1·07	·91	.79	·69	·61	·55	·49	·45	·41	·37	·32	·28	·25	·22	·19	·17	·12	·08	0
18	1·21	1·03	·89	·78	·69	·62	·56	·51	·46	·42	·36	·32	·28	·25	·22	·19	·14	·09	0
20	1·36	1·15	1·00	·88	·78	·70	·63	·57	·52	·47	·41	·36	·32	·28	·24	·21	·15	·10	0
22	1·51	1·28	1·11	·97	·86	·78	·70	·63	·58	·53	·46	·40	·35	·31	·27	·23	·17	·11	0
24	1·66	1·41	1·22	1·07	·95	·86	·77	·70	·64	·59	·51	·44	·39	·34	·30	·25	·18	·12	0
26	1·82	1·55	1·34	1·18	1·05	·94	·14	·77	·70	·64	·56	·49	·43	·37	·33	·28	·20	·13	0
28	1·98	1·69	1·46	1·28	1·14	1·02	·92	·83	·76	·69	·61	·53	·47	·41	·36	·31	·22	·14	0
30	2·15	1·83	1·59	1·39	1·24	1·11	1·00	·90	·82	·75	·66	·57	·51	·44	·39	·33	·24	·16	0
32	2·33	1·98	1·72	1·51	1·34	1·20	1·08	·98	·89	·81	·71	·62	·55	·48	·42	·36	·26	·17	0
34	2·52	2·14	1·85	1·63	1·45	1·30	1·17	1·06	·96	·88	·77	·67	·59	·52	·45	·39	·28	·18	0
36	2·71	2·30	2·00	1·75	1·56	1·40	1·26	1·14	1·04	·95	·83	·72	·64	·56	·49	·42	·30	·19	0
38	2·91	2·48	2·15	1·89	1·68	1·50	1·35	1·23	1·12	1·02	·89	·78	·69	·60	·52	·45	·32	·21	0
40	3·13	2·66	2·31	2·03	1·80	1·61	1·45	1·32	1·20	1·09	·95	·84	·74	·65	·56	·48	·35	·22	0
42	3·36	2·86	2·47	2·17	1·93	1·73	1·56	1·42	1·29	1·17	1·02	·90	·79	·69	·60	·52	·37	·24	0
44	3·60	3·06	2·65	2·33	2·07	1·86	1·67	1·52	1·38	1·26	1·10	·97	·85	·74	·65	·56	·40	·26	0
46	3·85	3·27	2·84	2·50	2·22	1·99	1·79	1·63	1·48	1·35	1·18	1·04	·91	·79	·69	·60	·43	·28	0
48		3·52	3·05	2·68	2·38	2·14	1·92	1·74	1·59	1·45	1·26	1·11	·97	·85	·74	·64	·46	·30	0
50			3·27	2·88	2·56	2·29	2·06	1·87	1·71	1·56	1·35	1·19	1·05	·91	·79	·69	·49	·32	0
52				3·09	2·74	2·46	2·22	2·01	1·83	1·67	1·46	1·28	1·12	·98	·85	·74	·53	·34	0
54				3·32	2·95	2·64	2·38	2·16	1·97	1·80	1·57	1·38	1·21	1·05	·92	·79	·57	·37	0
56				3·58	3·18	2·84	2·56	2·33	2·12	1·94	1·69	1·49	1·30	1·13	·99	·85	·62	·40	0
58				3·86	3·43	3·07	2·77	2·51	2·29	2·09	1·82	1·60	1 40	1·23	1·07	·92	·66	·43	0
60				4·17	3·71	3·33	3·00	2·71	2·48	2·26	1·97	1·73	1·52	1·33	1·16	1·00	·72	·46	0
62					4·03	3·61	3·26	2·95	2·69	2·45	2·14	1·88	1·65	1·44	1·26	1·09	·78	·50	0
64						3·94	3·55	3·22	2·93	2·67	2·34	2·05	1·80	1·57	1·37	1·18	·85	·55	0
66							3·89	3·53	3·21	2·93	2·56	2·25	1·97	1·72	1·50	1·30	·93	·60	0
68								3·88	3·53	3·23	2·82	2·47	2·17	1·90	1·65	1·43	1·02	·66	0

TABLE B.

To be entered with the Declination worked with at the side and the hour angle at the top.

	One Hour.						Two Hours.					Three Hours.				Four Hrs.		Hours.	
Dec.	0m.	10m.	20m.	30m.	40m.	50m.	0m.	10m.	20m.	30m.	45m.	0m.	15m.	30m.	45m.	0m.	30m.	5	6
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2	·13	·12	·10	·09	·08	·08	·07	·06	·06	·06	·05	·05	·05	·04	·04	·04	·04	·04	0
4	·27	·23	·20	·18	·16	·15	·14	·13	·12	·11	·11	·10	·09	·09	·08	·08	·08	·07	0
6	·41	·35	·31	·27	·25	·23	·21	·20	·18	·17	·16	·15	·14	·13	·13	·12	·11	·11	0
8	·54	·47	·41	·37	·33	·30	·28	·26	·24	·23	·21	·20	·19	·18	·17	·16	·15	·15	0
10	·68	·59	·52	·46	·42	·38	·35	·33	·31	·29	·27	·25	·23	·22	·21	·20	·19	·18	0
12	·82	·71	·62	·55	·50	·46	·42	·40	·37	·35	·32	·30	·28	·27	·26	·25	·23	·22	0
14	·96	·83	·73	·65	·59	·54	·50	·46	·44	·41	·38	·35	·33	·31	·30	·29	·27	·26	0
16	1·11	·95	·84	·75	·68	·62	·57	·53	·50	·47	·43	·41	·38	·36	·34	·33	·31	·30	0
18	1·26	1·08	·95	·85	·77	·70	·65	·60	·57	·53	·49	·46	·43	·41	·39	·38	·35	·34	0
20	1·41	1·21	1·06	·95	·86	·79	·73	·68	·63	·60	·55	·51	·48	·46	·44	·42	·39	·38	0
22	1·56	1·34	1·18	1·06	·96	·87	·81	·75	·70	·66	·66	·57	·54	·51	·49	·47	·44	·42	0

When the latitude and declination are of the same name, the correction in Table B is to be subtracted from that in Table A; the result is the correction of longitude for each mile of latitude, and is to be called positive or negative according as the part from Table A is greater or less than the part from Table B.

When the latitude and declination are of different names, the correction in Table A is to be added to that in Table B, and the result is the correction of longitude for each mile of latitude, and is always to be called positive.

When the correction is positive, an increase of latitude will make the longitude more to the eastward, and a decrease of latitude will make the longitude more to the westward.

When the correction is negative, an increase of latitude will make the longitude more to the westward, and a decrease of latitude will make the longitude more to the eastward.

Note by J. F. T. The precept is given as above in the original. But it is evident upon a little reflection, that this is correct for the easterly hour angle only or a.m. sights of the sun. In the case of the westerly hour angle or p.m. sights of the sun. When the correction is positive, an increase of latitude will make the longitude more to the westward, and a decrease of latitude will make the longitude more to the eastward.

Example.

If, on November 30th, 1873, at the entrance of the English Channel, when a Chronometer showed $29^d\ 21^h\ 51^m\ 36^s$ Mean Time at Greenwich, the Sun's true

I must apologise for the length of this letter; but I consider it to be my duty to make known the value of those simple methods of finding a ship's position at sea, at other times than noon.

J. F. TRIVETT.

TABLE A.

To be entered with the latitude worked with at the side and the hour angle at the top.

	One Hour.						Two Hours.					Three Hours.				Four Hrs.		Hours.	
Lat.	0m.	10m.	20m.	30m.	40m.	50m.	0m.	10m.	20m.	30m.	45m.	0m.	15m.	30m.	45m.	0m.	30m.	5	6
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2	·13	·11	·10	·08	·07	·07	·06	·06	·05	·04	·04	·04	·03	·03	·02	·02	·01	·01	0
4	·26	·22	·19	·17	·15	·13	·12	·11	·10	·9	·08	·07	·06	·05	·04	·04	·03	·02	0
6	·39	·33	·29	·25	·22	·20	·18	·16	·15	·13	·12	·11	·09	·08	·07	·06	·04	·03	0
8	·52	·45	·39	·34	·20	·27	·24	·22	·20	·18	·16	·14	·12	·11	·09	·08	·06	·04	0
10	·66	·56	·48	·43	·38	·34	·30	·27	·25	·23	·20	·18	·15	·13	·11	·10	·08	·05	0
12	·79	·67	·58	·51	·46	·41	·37	·33	·30	·28	·24	·21	·18	·16	·14	·12	·09	·06	0
14	·93	·79	·68	·60	·53	·48	·43	·39	·35	·32	·28	·25	·21	·19	·16	·14	·10	·07	0
16	1·07	·91	.79	·69	·61	·55	·49	·45	·41	·37	·32	·28	·25	·22	·19	·17	·12	·08	0
18	1·21	1·03	·89	·78	·69	·62	·56	·51	·46	·42	·36	·32	·28	·25	·22	·19	·14	·09	0
20	1·36	1·15	1·00	·88	·78	·70	·63	·57	·52	·47	·41	·36	·32	·28	·24	·21	·15	·10	0
22	1·51	1·28	1·11	·97	·86	·78	·70	·63	·58	·53	·46	·40	·35	·31	·27	·23	·17	·11	0
24	1·66	1·41	1·22	1·07	·95	·86	·77	·70	·64	·59	·51	·44	·39	·34	·30	·25	·18	·12	0
26	1·82	1·55	1·34	1·18	1·05	·94	·14	·77	·70	·64	·56	·49	·43	·37	·33	·28	·20	·13	0
28	1·98	1·69	1·46	1·28	1·14	1·02	·92	·83	·76	·69	·61	·53	·47	·41	·36	·31	·22	·14	0
30	2·15	1·83	1·59	1·39	1·24	1·11	1·00	·90	·82	·75	·66	·57	·51	·44	·39	·33	·24	·16	0
32	2·33	1·98	1·72	1·51	1·34	1·20	1·08	·98	·89	·81	·71	·62	·55	·48	·42	·36	·26	·17	0
34	2·52	2·14	1·85	1·63	1·45	1·30	1·17	1·06	·96	·88	·77	·67	·59	·52	·45	·39	·28	·18	0
36	2·71	2·30	2·00	1·75	1·56	1·40	1·26	1·14	1·04	·95	·83	·72	·64	·56	·49	·42	·30	·19	0
38	2·91	2·48	2·15	1·89	1·68	1·50	1·35	1·23	1·12	1·02	·89	·78	·69	·60	·52	·45	·32	·21	0
40	3·13	2·66	2·31	2·03	1·80	1·61	1·45	1·32	1·20	1·09	·95	·84	·74	·65	·56	·48	·35	·22	0
42	3·36	2·86	2·47	2·17	1·93	1·73	1·56	1·42	1·29	1·17	1·02	·90	·79	·69	·60	·52	·37	·24	0
44	3·60	3·06	2·65	2·33	2·07	1·86	1·67	1·52	1·38	1·26	1·10	·97	·85	·74	·65	·56	·40	·26	0
46	3·85	3·27	2·84	2·50	2·22	1·99	1·79	1·63	1·48	1·35	1·18	1·04	·91	·79	·69	·60	·43	·28	0
48		3·52	3·05	2·68	2·38	2·14	1·92	1·74	1·59	1·45	1·26	1·11	·97	·85	·74	·64	·46	·30	0
50			3·27	2·88	2·56	2·29	2·06	1·87	1·71	1·56	1·35	1·19	1·05	·91	·79	·69	·49	·32	0
52				3·09	2·74	2·46	2·22	2·01	1·83	1·67	1·46	1·28	1·12	·98	·85	·74	·53	·34	0
54				3·32	2·95	2·64	2·38	2·16	1·97	1·80	1·57	1·38	1·21	1·05	·92	·79	·57	·37	0
56				3·58	3·18	2·84	2·56	2·33	2·12	1·94	1·69	1·49	1·30	1·13	·99	·85	·62	·40	0
58				3·86	3·43	3·07	2·77	2·51	2·29	2·09	1·82	1·60	1 40	1·23	1·07	·92	·66	·43	0
60				4·17	3·71	3·33	3·00	2·71	2·48	2·26	1·97	1·73	1·52	1·33	1·16	1·00	·72	·46	0
62					4·03	3·61	3·26	2·95	2·69	2·45	2·14	1·88	1·65	1·44	1·26	1·09	·78	·50	0
64						3·94	3·55	3·22	2·93	2·67	2·34	2·05	1·80	1·57	1·37	1·18	·85	·55	0
66							3·89	3·53	3·21	2·93	2·56	2·25	1·97	1·72	1·50	1·30	·93	·60	0
68								3·88	3·53	3·23	2·82	2·47	2·17	1·90	1·65	1·43	1·02	·66	0

TABLE B.

To be entered with the Declination worked with at the side and the hour angle at the top.

	One Hour.						Two Hours.					Three Hours.				Four Hrs.		Hours.	
Dec.	0m.	10m.	20m.	30m.	40m.	50m.	0m.	10m.	20m.	30m.	45m.	0m.	15m.	30m.	45m.	0m.	30m.	5	6
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2	·13	·12	·10	·09	·08	·08	·07	·06	·06	·06	·05	·05	·05	·04	·04	·04	·04	·04	0
4	·27	·23	·20	·18	·16	·15	·14	·13	·12	·11	·11	·10	·09	·09	·08	·08	·08	·07	0
6	·41	·35	·31	27	·25	·23	·21	·20	·18	·17	·16	·15	·14	·13	·13	·12	·11	·11	0
8	·54	·47	·41	·37	·33	·30	·28	·26	·24	·23	·21	·20	·19	·18	·17	·16	·15	·15	0
10	·68	·59	·52	·46	·42	·38	·35	·33	·31	·29	·27	·25	·23	·22	·21	·20	·19	·18	0
12	·82	·71	·62	·55	·50	·46	·42	·40	·37	·35	·32	·30	·28	·27	·26	·25	·23	·22	0
14	·96	·83	·73	·65	·59	·54	·50	·46	·44	·41	·38	·35	·33	·31	·30	·29	·27	·26	0
16	1·11	·95	·84	·75	·68	·62	·57	·53	·50	·47	·43	·41	·38	·36	·34	·33	·31	·30	0
18	1·26	1·08	·95	·85	·77	·70	·65	·60	·57	·53	·49	·46	·43	·41	·39	·38	·35	·34	0
20	1·41	1·21	1·06	·95	·86	·79	·73	·68	·63	·60	·55	·51	·48	·46	·44	·42	·39	·38	0
22	1·56	1·34	1·18	1·06	·96	·87	·81	·75	·70	·66	·66	·57	·54	·51	·49	·47	·44	·42	0

When the latitude and declination are of the same name, the correction in Table B is to be subtracted from that in Table A; the result is the correction of longitude for each mile of latitude, and is to be called positive or negative according as the part from Table A is greater or less than the part from Table B.

When the latitude and declination are of different names, the correction in Table A is to be added to that in Table B, and the result is the correction of longitude for each mile of latitude, and is always to be called positive.

When the correction is positive, an increase of latitude will make the longitude more to the eastward, and a decrease of latitude will make the longitude more to the westward.

When the correction is negative, an increase of latitude will make the longitude more to the westward, and a decrease of latitude will make the longitude more to the eastward.

Note by J. F. T. The precept is given as above in the original. But it is evident upon a little reflection, that this is correct for the easterly hour angle only or a.m. sights of the sun. In the case of the westerly hour angle or p.m. sights of the sun. When the correction is positive, an increase of latitude will make the longitude more to the westward, and a decrease of latitude will make the longitude more to the eastward.

Example.

If, on November 30th, 1873, at the entrance of the English Channel, when a Chronometer showed $29^d\ 21^h\ 51^m\ 36^s$ Mean Time at Greenwich, the Sun's true

I must apologise for the length of this letter; but I consider it to be my duty to make known the value of those simple methods of finding a ship's position at sea, at other times than noon.

J. F. TRIVETT.

TABLE A.

To be entered with the latitude worked with at the side and the hour angle at the top.

	One Hour.						Two Hours.					Three Hours.				Four Hrs.		Hours.	
Lat.	0m.	10m.	20m.	30m.	40m.	50m.	0m.	10m.	20m.	30m.	45m.	0m.	15m.	30m.	45m.	0m.	30m.	5	6
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2	·13	·11	·10	·08	·07	·07	·06	·06	·05	·04	·04	·04	·03	·03	·02	·02	·01	·01	0
4	·26	·22	·19	·17	·15	·13	·12	·11	·10	·9	·08	·07	·06	·05	·04	·04	·03	·02	0
6	·39	·33	·29	·25	·22	·20	·18	·16	·15	·13	·12	·11	·09	·08	·07	·06	·04	·03	0
8	·52	·45	·39	·34	·20	·27	·24	·22	·20	·18	·16	·14	·12	·11	·09	·08	·06	·04	0
10	·66	·56	·48	·43	·38	·34	·30	·27	·25	·23	·20	·18	·15	·13	·11	·10	·08	·05	0
12	·79	·67	·58	·51	·46	·41	·37	·33	·30	·28	·24	·21	·18	·16	·14	·12	·09	·06	0
14	·93	·79	·68	·60	·53	·48	·43	·39	·35	·32	·28	·25	·21	·19	·16	·14	·10	·07	0
16	1·07	·91	.79	·69	·61	·55	·49	·45	·41	·37	·32	·28	·25	·22	·19	·17	·12	·08	0
18	1·21	1·03	·89	·78	·69	·62	·56	·51	·46	·42	·36	·32	·28	·25	·22	·19	·14	·09	0
20	1·36	1·15	1·00	·88	·78	·70	·63	·57	·52	·47	·41	·36	·32	·28	·24	·21	·15	·10	0
22	1·51	1·28	1·11	·97	·86	·78	·70	·63	·58	·53	·46	·40	·35	·31	·27	·23	·17	·11	0
24	1·66	1·41	1·22	1·07	·95	·86	·77	·70	·64	·59	·51	·44	·39	·34	·30	·25	·18	·12	0
26	1·82	1·55	1·34	1·18	1·05	·94	·14	·77	·70	·64	·56	·49	·43	·37	·33	·28	·20	·13	0
28	1·98	1·69	1·46	1·28	1·14	1·02	·92	·83	·76	·69	·61	·53	·47	·41	·36	·31	·22	·14	0
30	2·15	1·83	1·59	1·39	1·24	1·11	1·00	·90	·82	·75	·66	·57	·51	·44	·39	·33	·24	·16	0
32	2·33	1·98	1·72	1·51	1·34	1·20	1·08	·98	·89	·81	·71	·62	·55	·48	·42	·36	·26	·17	0
34	2·52	2·14	1·85	1·63	1·45	1·30	1·17	1·06	·96	·88	·77	·67	·59	·52	·45	·39	·28	·18	0
36	2·71	2·30	2·00	1·75	1·56	1·40	1·26	1·14	1·04	·95	·83	·72	·64	·56	·49	·42	·30	·19	0
38	2·91	2·48	2·15	1·89	1·68	1·50	1·35	1·23	1·12	1·02	·89	·78	·69	·60	·52	·45	·32	·21	0
40	3·13	2·66	2·31	2·03	1·80	1·61	1·45	1·32	1·20	1·09	·95	·84	·74	·65	·56	·48	·35	·22	0
42	3·36	2·86	2·47	2·17	1·93	1·73	1·56	1·42	1·29	1·17	1·02	·90	·79	·69	·60	·52	·37	·24	0
44	3·60	3·06	2·65	2·33	2·07	1·86	1·67	1·52	1·38	1·26	1·10	·97	·85	·74	·65	·56	·40	·26	0
46	3·85	3·27	2·84	2·50	2·22	1·99	1·79	1·63	1·48	1·35	1·18	1·04	·91	·79	·69	·60	·43	·28	0
48		3·52	3·05	2·68	2·38	2·14	1·92	1·74	1·59	1·45	1·26	1·11	·97	·85	·74	·64	·46	·30	0
50			3·27	2·88	2·56	2·29	2·06	1·87	1·71	1·56	1·35	1·19	1·05	·91	·79	·69	·49	·32	0
52				3·09	2·74	2·46	2·22	2·01	1·83	1·67	1·46	1·28	1·12	·98	·85	·74	·53	·34	0
54				3·32	2·95	2·64	2·38	2·16	1·97	1·80	1·57	1·38	1·21	1·05	·92	·79	·57	·37	0
56				3·58	3·18	2·84	2·56	2·33	2·12	1·94	1·69	1·49	1·30	1·13	·99	·85	·62	·40	0
58				3·86	3·43	3·07	2·77	2·51	2·29	2·09	1·82	1·60	1·40	1·23	1·07	·92	·66	·43	0
60				4·17	3·71	3·33	3·00	2·71	2·48	2·26	1·97	1·73	1·52	1·33	1·16	1·00	·72	·46	0
62					4·03	3·61	3·26	2·95	2·69	2·45	2·14	1·88	1·65	1·44	1·26	1·09	·78	·50	0
64						3·94	3·55	3·22	2·93	2·67	2·34	2·05	1·80	1·57	1·37	1·18	·85	·55	0
66							3·89	3·53	3·21	2·93	2·56	2·25	1·97	1·72	1·50	1·30	·93	·60	0
68								3·88	3·53	3·23	2·82	2·47	2·17	1·90	1·65	1·43	1·02	·66	0

TABLE B.

To be entered with the Declination worked with at the side and the hour angle at the top.

	One Hour.						Two Hours.					Three Hours.				Four Hrs.		Hours.	
Dec.	0m.	10m.	20m.	30m.	40m.	50m.	0m.	10m.	20m.	30m.	45m.	0m.	15m.	30m.	45m.	0m.	30m.	5	6
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2	·13	·12	·10	·09	·08	·08	·07	·06	·06	·06	·05	·05	·05	·04	·04	·04	·04	·04	0
4	·27	·23	·20	·18	·16	·15	·14	·13	·12	·11	·11	·10	·09	·09	·08	·08	·08	·07	0
6	·41	·35	·31	·27	·25	·23	·21	·20	·18	·17	·16	·15	·14	·13	·13	·12	·11	·11	0
8	·54	·47	·41	·37	·33	·30	·28	·26	·24	·23	·21	·20	·19	·18	·17	·16	·15	·15	0
10	·68	·59	·52	·46	·42	·38	·35	·33	·31	·29	·27	·25	·23	·22	·21	·20	·19	·18	0
12	·82	·71	·62	·55	·50	·46	·42	·40	·37	·35	·32	·30	·28	·27	·26	·25	·23	·22	0
14	·96	·83	·73	·65	·59	·54	·50	·46	·44	·41	·38	·35	·33	·31	·30	·29	·27	·26	0
16	1·11	·95	·84	·75	·68	·62	·57	·53	·50	·47	·43	·41	·38	·36	·34	·33	·31	·30	0
18	1·26	1·08	·95	·85	·77	·70	·65	·60	·57	·53	·49	·46	·43	·41	·39	·38	·35	·34	0
20	1·41	1·21	1·06	·95	·86	·79	·73	·68	·63	·60	·55	·51	·48	·46	·44	·42	·39	·38	0
22	1·56	1·34	1·18	1·06	·96	·87	·81	·75	·70	·66	·66	·57	·54	·51	·49	·47	·44	·42	0

When the latitude and declination are of the same name, the correction in Table B is to be subtracted from that in Table A; the result is the correction of longitude for each mile of latitude, and is to be called positive or negative according as the part from Table A is greater or less than the part from Table B.

When the latitude and declination are of different names, the correction in Table A is to be added to that in Table B, and the result is the correction of longitude for each mile of latitude, and is always to be called positive.

When the correction is positive, an increase of latitude will make the longitude more to the eastward, and a decrease of latitude will make the longitude more to the westward.

When the correction is negative, an increase of latitude will make the longitude more to the westward, and a decrease of latitude will make the longitude more to the eastward.

Note by J. F. T. The precept is given as above in the original. But it is evident upon a little reflection, that this is correct for the easterly hour angle only or a.m. sights of the sun. In the case of the westerly hour angle or p.m. sights of the sun. When the correction is positive, an increase of latitude will make the longitude more to the westward, and a decrease of latitude will make the longitude more to the eastward.

Example.

If, on November 30th, 1873, at the entrance of the English Channel, when a Chronometer showed $29^d\ 21^h\ 51^m\ 36^s$ Mean Time at Greenwich, the Sun's true

altitude be 11° 23′ 08″ E. of Mer., Latitude by account 49° 20′ N., required the Longitude by the Chronometer.

					Sun's Dec^{n} Nov. 30th, PII incr.		E.T. 30th, sub^{t} from A.T.	
29^{d}	21^{h}	51^{m}	36^{s}	G.M.T.	21° 43′ 28·6″ S	23·99	11^{m} 1·88^{s}	−0·921
2	8	24		before noon 30th.	51·3	2	1·96	2
					21 42 37·3	47·98	11 3·84	1·842
					6	2·399		92
					2	799		31
					20^{s}	133		1·965
					4	27		
a		11°	23′	08″		51·338		
l		49	20	00	sec.	185981		
P		111	42	37	cosec.	031953		
		172	25	45				
S		86	12	52·5	cos.	8·819676		
s − a		74	49	44·5	sin.	9·984594		
h ∠		2^{h}	31^{m}	$26·5^{s}$	sin.^{2}	9·022204		
	29^{d}	21	28	33·5	App. Time at Ship.		21 28 34	
		− 11		3·8	Equa^{n} of time.		21 51 36	
	29	21	17	29·7	Mean Time at Ship.		0 23 02	Chron. fast
	29	21	51	36	Mean Time at Greenwich.		on App. Time at Ship.	
		4)34	06·3					
		8°	31·6′		Longitude West.			

The above is the usual calculation every day required—

And about two hours afterwards, when the same chronometer showed 23^{h} 40^{m} 36^{s}, suppose the Sun's true altitude to be 18° 11′, his declination at that time being 21° 43′ S, and the ship to have made 17′ of difference of longtitude to the Eastward in the interval, required the latitude by ex-meridian problem.

29^{d}	23^{h}	40^{m}	36^{s}	Time by Chron.	
	23	02		Chron. fast on A.T.S.	
29^{d}	23	17	34		
+		1	08	cor. for run.	
29^{d}	23	18	42	App. Time at Ship.	
		41	18	before noon 30th.	

41^{m} 18^{s}	sin. sq.	7·9083
lat. 49°, dec. 22°		·109
36′	sin.	8·017
18 11	True alt.	
18 47	Mer^{n} alt.	
71 13	Z dist. N.	
21 43	Dec^{n} S.	
49 30	Lat. North.	

Table A.

h ∠ 2^{h} 30^{m} and lat. 49° 1·50

Table B.

H ∠ 2 30 and dec. 22 ·65

Error in the long. for each mile of lat. in error . . } 2·15

10 miles of lat. in error.

21·5 correction of longitude.

8 31·6 West Longitude by erroneous latitude.

8 10·1 West corrected longitude.

BOOKS RECEIVED.

How to Make Money by Patents. By Charles Barlow. Third Edition. London: Marlborough and Co. 1873.

A good and useful work, written throughout with vigour and clearness. All inventors, who dream of princely fortunes, should read this successful little book carefully. The author is evidently far too practical to be content with empty praise or philanthropic achievements: the value of a patent to him is its money value, and he certainly shows how to make the most of an invention. A well-written book like this must be an admirable and deserved advertisement for a patent agent like the author.

Practical Plane Geometry. By J. F. Heather.

For some time a great want has been felt by the British student in not being able, at a moderate cost, to obtain a really good treatise on geometry. There are some very good works on the subject, both by French and German authors; but, apart from their not being intelligible to all students, they are, as a rule, both expensive and cumbersome. Under these circumstances, it is with great pleasure that we, at last, find a really good work on the subject, published in Weale's Series—not that really good works are rarities in this Series, for the very fact of its being one of them establishes it to be both good and cheap. Euclid's Elements, the grand geometrical basis, are brought into active service throughout the work. The several chapters are generally commenced by certain theorems, relating to the divisions of the subject to which the chapter is devoted, being stated, upon which the problems which follow are based. The arrangement and definition of different lines and points used in the construction of the problems are good. Some of the problems we have never seen before; but, in most cases, their solution and proof is satisfactory. Some of the methods of solution of old problems are also new to us, and are, in some cases, very simple; the proofs following serving to impress the particular method of solution on the memory.

The hints on scale-making are concise and clear. There are, in our opinion, a few flaws in the book, possibly oversights, of which we will point out a few. Defect, in the usual acceptance of the term, is scarcely applicable in the last paragraph of Section 18, Chapter I. Before talking of angles and degrees it would be just as well to define the terms, before the diagonal scale, or any other of equal accuracy, has been explained. Problems involving its use are put similarly. Problems involving a knowledge of setting off angles by degrees are put before that knowledge has been imparted. Now, unless a previous knowledge of the

subject is assumed, which the minute and clear definitions of some points of the subject impresses us with the belief that it is not, it will be evident that this arrangement is scarcely the thing.

If there are two or more ways of solving a problem, we consider the simplest should take the first place; the others may, for the time, be passed—they do very well for exercises. Now, some of the problems appear to us to be made unnecessarily abstruse, from the method of solution employed. For example, take Problem 73, page 96—To describe an arc of given radius to touch two given straight lines. We think a simpler method of solution would be thus: Assuming the lines not to be parallel, produce the lines until they intersect, bisect the angle between them; from the point of intersection draw a perpendicular to either of the given lines, upon which set off, from the point of intersection, the given radius; then a perpendicular let fall from this point will cut the line bisecting the angle between the given lines in the centre of the arc required. Proof obvious. If the lines are parallel it is evident that the radius would be limited to one-half, the shortest distance between them, and the middle point of a line joining them would be the centre of the arc. We cannot help thinking, also, that the solution given to Problem 83, page 107, looks more like getting round it than getting over it. We think angles and degrees are not necessary, and the following solution simpler. Let A, B, C, D be the given square, with A and C as centres, with a radius equal to A, C; describe arcs cutting each other in E. From B draw lines to the opposite sides of the square, parallel to lines that would pass through A and E and C and E respectively. Join the points where the sides are cut, and you have the equilateral triangle required. Similarly, for the second case. Reason plain.

We consider Chapter 8, on Geometry on the Ground, to be exceedingly useful to engineering students, as an idea is at once obtained of the various ways and means of overcoming the difficulties that constantly occur in field work; but they must not run away with the idea that the methods there put forth are the only ways of doing the same thing, as it will frequently happen that, either from the want of assistance or the necessary apparatus, none of them can be employed. A little personal responsibility as to the accuracy of the result is one of the best means of bringing out a man's capability of putting his theoretical knowledge to practical use; and we have no hesitation in saying that after Mr. Heather's Plane Geometry has been thoroughly digested, the theoretical knowledge will have been obtained—its practical application will rest with the individual.

The work is, on the whole, a good one, and will doubtless be greatly sought after.

SHIPBUILDING, 1873.

Sailing Ships.

Port.	No. of Ships First 6 Months.	No. of Ships July to October (inclusive).	Tons Gross First 6 Months.	Tons Gross July to October (inclusive).
Aberdeen ...	5	4	723	2,401
Banff ...	3	4	548	480
Bristol ...	3	4	438	654
Castleton ...	5	—	100	—
Cowes ...	7	1	257	113
Dartmouth ...	15	7	1,609	451
Deal ...	4	2	264	146
Dundee ...	2	1	863	260
Faversham ...	4	1	175	185
Glasgow ...	6	8	1,017	8,145
Grimsby ...	10	3	643	176
Hull ...	11	7	737	305
Jersey ...	7	6	518	576
Liverpool ...	12	8	3,939	8,307
London ...	9	1	456	31
Lowestoft ...	2	7	55	294
North Shields ...	5	2	629	107
Plymouth ...	5	5	761	525
Portsmouth ...	4	1	334	27
Rochester ...	4	2	220	73
Rye ...	8	3	369	156
Southampton ...	4	10	307	341
Sunderland ...	10	11	4,068	7,860
Yarmouth ...	8	8	302	270
Other Ports ...	47	41	4,933	4,860
Total ...	200	147	24,265	36,743

The Sword Fish.—A log of teak, 29 ft. long and 48 in. in circumference, recently picked up on the Coromandel coast, was found nearly split in two for 9 ft. of its length by a sword-fish, the sword having penetrated about 11 in. into the solid teak.

SHIPBUILDING, 1873.

Steamships.

Port.	No. of Ships First Half Year.	No. of Ships Added July to October (inclusive).	Tons Gross. First Half Year.	Tons Gross Added July to October (inclusive).
Glasgow ...	49	26	92,816	42,131
Greenock	6	5	14,127	11,022
Port Glasgow	11	3	12,066	1,864
Sunderland	51	18	60,727	21,486
Newcastle...	33	21	44,513	23,533
North Shields	22	13	10,407	7,016
South Shields	9	2	6,626	461
Liverpool ...	19	1	21,109	552
Dundee ...	5	2	6,108	2,628
Hartlepool	6	5	7,225	3,546
Aberdeen ...	6	3	4,128	1,876
London ...	9	10	6,752	3,931
Belfast ...	1	—	2,652	—
Stockton ...	5	4	5,303	6,206
Kirkcaldy ...	2	—	2,444	—
Middlesboro'	6	4	7,626	4,421
Hull ...	6	5	4,015	8,351
Leith ...	1	3	1,400	1,334
Bo'ness ...	2	—	2,196	—
Whitehaven	1	—	1,002	—
Barrow ...	—	1	—	3,001
Other ports	13	8	2,178	2,192
Total steam	263	134	315,420	145,551

Summary of above Tables.

Sailing ships	200	147	24,265	36,743
Steamers ...	263	134	315,420	145,551
Totals	463	281	339,685	182,294

LLOYDS' NEW RULE OF FREEBOARD.

THAT the subject of settling the Freeboard of Merchant Ships by rule is one that has exercised the minds of the Royal Commissioners on unseaworthy ships is not to be wondered at, seeing the conflicting evidence placed before them relating to it. It had been stated that the question is one of easy solution, and that prejudice, and self-interest, and disregard for the life of the sailor have alone stood in the way of settlement. Witnesses who have attended before the Royal Commission have shown that the difficulties of the question, and nothing else, have stood in the way. Mr. Rundell stated that he considered "a uniform load line to be an idea so absurd as not to admit of serious discussion;" and other competent witnesses showed, and, we think, showed conclusively, that to attempt to regulate the freeboard of merchant ships by any general rule founded either upon a fixed percentage of freeboard to depth of hold, or upon a fixed percentage of buoyancy, would not only be sheer waste of time, but would be a needless and unwise interference with fair trade, for, besides hampering the honest, it would gradually bring about the construction of weak and bad ships.

As the Royal Commission were about to adjourn for the autumn, Mr. Martell, the talented and deep-thinking chief surveyor for Lloyds' Register, whose views are worth serious consideration, and are in direct opposition to ours, handed in a set of tables, which had been that day completed under his directions; and when handing them in, and in answer to the question, "How do you arrive at your load line?" stated (11,201), "By obtaining approximately a means of cutting off in an easy manner, from vessels of different forms and dimensions, an amount of spare buoyancy, in conformity with the practice of shipowners generally of high standing. This is the first indication that I am aware of, of a table of freeboard being based on sound principles, where it can be applied to ships afloat as well as ships building." (11,202.) The question was then asked, "And it would apply to steam vessels as well as to sailing vessels?—Yes, to every vessel. It takes into consideration the length, breadth, depth, capacity, proportion, superstructures, sheer, and round of beam; in fact, all the considerations usually recognized as bearing on the subject have been taken into account in forming this table:" and, in reply to question 11,222, Mr. Martell stated * * * "seeing that there is no table framed at the present time to meet the requirements of various kinds and types of vessels, such a scheme as this, embracing all types of vessels, and framed on sound principles, should go forth to the world with the stamp of Government authority, or of some authority to show that it had been recognized."

Mr. Martell's tables have since been revised, and are now issued by the Committee of Lloyds' Register, for the consideration of shipbuilders and shipowners.

The Committee of Lloyds' Register have at their command the services of eminent authorities upon questions connected with naval architecture, and anything put forward by them for consideration, as these tables are, demands, and must receive, most respectful consideration; and will, when they have failed in their primary object, be accepted with gratitude as another and important contribution to this interesting controversy; and as further evidence of the impossibility of applying general rules to the ships of the Mercantile Marine. The full and free examination which the whole subject of freeboard has received during the past year in these pages, and in the public press, generally, as well as the almost unanimous opinion of the witnesses examined by the Royal Commission, will have prepared our readers for the prominent note placed at the head of each of Mr. Martell's tables, that it "is not intended to fix a hard and fast line, but a fair line of reference for ordinary trades." It may be said, indeed, that the only serious proposal put forward recently for a hard and fast line, began and ended with a Bill introduced into Parliament by the junior member for Derby, and we are satisfied that, even if the way had not so far been cleared for them, the Committee of Lloyds' Register would not have been led away by any belief in its possibility. It may be remarked, however, *en passant*, that any definite scale, whatever, put forward authoritatively, even with a note on it, has a strong, and almost certain, tendency to become hard and fast; and for the reason, that before exceptions from the rule can be allowed, the burden of proof that the ship is exceptional must lie upon those who claim exception; and the tendency of this is to induce shipowners to devise means for evading the spirit of the rule, by complying with it in form, or by building down to it, rather than trouble themselves to make good a claim for exemption: and, again, many people regard any ship that does not comply with rules issued by a large Register Committee as a ship bad or imperfect in some way. The new rule has as its basis the principle that a ship's freeboard should be so fixed that the volume of displacement below her load line shall not exceed a proportion of the total volume below the upper deck, the proportion decreasing, and, consequently, the ratio of spare buoyancy increasing as the depth below the deck increases, and, also, beyond a certain limit, as the length increases. The method by which they propose practically to apply the principle is by making use of the dimensions and tonnage recorded upon the ship's certificate of registry. The tables are framed with such exhaustive care, that for any degree of fineness, and for any depth of hold, the freeboard necessary to give the required percentage of spare buoyancy is shown even to a quarter of an inch.

We propose in this article to consider, first, the practical details of the method, thus professedly so exact, and afterwards to examine the way in which it is applied; and, before we do so, we must bestow on Mr. Martell and his staff a word of praise for their energy and labour in a good cause.

The rule is, multiply the register tonnage below the upper deck by 100, and divide this by the product of the registered length, breadth, and depth of the vessel. The quotient, a decimal fraction, represents the proportion borne by the inside volume of the ship, under her deck, to a rectangular volume of the same length, breadth, and depth. This fraction is called the "co-efficient of fineness." The tables consist of columns showing the various heights of freeboard required for any given depth of hold, according to the fineness of the ship, and are graduated to intervals of three inches in the depth of hold, and to hundredth parts in the co-efficients of fineness, which range from ·58 to ·75. A co-efficient of fineness is frequently used by builders to estimate the tonnage of their ships from the length, breadth, and depth. A practised eye enables them to guess at the fraction representing the proportion which the register tonnage will bear to the product of the three principal dimensions.

The practical applicability of the new rules of freeboard to the purpose for which they are intended (that of securing a given percentage of spare buoyancy) appears to depend upon the utilization of the particulars given upon the registry of each ship. Most of our readers are familiar with the names given to these dimensions and quantities, although, perhaps, few have ever considered their real signification. The registered dimensions are recorded in order that the ship may be identified, and have no direct connection with the register tonnage, or with anything but means for identification. The length, which we will first consider in its connection with the subject in hand, as described on the register as "length from fore side of stem under bowsprit to the aft side of the head of the stern post." It will at once be seen that this has no direct relation to the tonnage of the ship, when we state that the tonnage length is the length inside the ship on the tonnage deck. In ships of the same tonnage length, and the same volume, the registered length may vary owing to the position of the stempost, or the shape of the stem. Some iron ships, as is well known, have an upright stem and no figure head, while others have the stem turned out to form an ornamental knee of head, so that it terminates under the figure, and this point is that from which the registered length is measured. We have before us, while writing, a drawing of a large ship of the latter class, of such dimensions and form that if she had an upright stem (or, perhaps, more correctly speaking, a straight stem) the registered length

would be 4·3 per cent. less, without any perceptible difference in the register tonnage. This would give a difference of 0·3 in the co-efficient and a corresponding difference of more than three inches in the freeboard. In short, two ships, for all practical purposes precisely alike, are so affected by this rule that one would carry 80 tons deadweight more than the other, simply because of the shape of her stem. This difference might be much increased, even doubled, in ships designed to evade the rule, without any apparent distortion of form. The *breadth* recorded on a ship's register, is her extreme breadth outside, and in the preparation of the tables, we notice that this fact has been taken cognizance of. For a given freeboard the co-efficients of fineness differ in the case of sailing ships, that for composite ships being ·02 less, and for wood ships ·04 less, than for iron ships of the same size. It is obvious that if an iron ship and a wooden ship be taken of the same internal volume and form, the outside breadth of the former will be less than the outside breadth of the latter, and that, consequently, the co-efficient used in the rule will be more for the iron ship than the wooden one. It thus appears that the co-efficient is not merely the measure of the fineness of the ship, but of her thinness also, and that it must be dealt with differently in its application to freeboard of volume as the thickness of the ship's side differs. This is, as we have seen, partially recognised, and, so far as we can see, without going into elaborate calculations, a proper allowance is made between iron and composite, and between iron and wood ships, provided "wood" be understood to mean "hard wood." It is well known, however, that many fir ships are thicker than oak ships by as much as composite vessels are thicker than those built of iron; and the practical effect of the rule will be give to ships built of fir a smaller freeboard than others, which only differ from them in being built of oak. It may perhaps be said that we are too nice about details in this criticism, but we submit that, on the other hand, it may be said that a scale, nice to a quarter of an inch, is subject to grave objections, when it leaves openings for capricious differences of two inches. The relation of the registered breadth, to the breadths taken for tonnage, is also in iron ships affected by the presence or absence of ceiling. This would modify the co-efficient of fineness at least half as much as the difference between an iron and a composite ship, but we notice no provision to meet the case in the tables.

The depth for tonnage is the only registered dimension which can, without liability to error, be used in the proposed rule. It is somewhat surprising that in a recent article in a daily paper, Lloyds' new rule was attacked in this, which is really its *only* accurate element. It was assumed with a strange misapprehension alike of the character of the registered depth of a ship and of the Board of Trade regulations for recording freeboard, that the depth of the keel would in both cases affect

the question. "Again," said this writer, "keels will get out of fashion for it should be remembered that keels form part of the draught of a ship, and the deeper those keels are the less comparative freeboard they give to the hull above water. Already, it is said, the fiat has gone forth among speculative builders to build ships with no keels, and thus gain several inches of freeboard." We hope no speculative builder has been yet so speculative as to give up the keel in his design. It is true the draught of water is reckoned from the keel, but the registered depth is the inside depth of the ship, and the recorded freeboard is measured from the lowest point of the deck down to the water, and is intended for comparison, not with the draught of water of the ship, but with the depth of her hold. The scales of feet on the stem and stern post are not intended to be relied on for giving the freeboard; they afford the means of recording the trim of the ship and furnish a check upon the measurement of the freeboad, which is taken from the deck to the water. In the rule which we are examining we notice that, with a scrupulous attention to detail, the round of beam is taken into the account, and an addition is made to the freeboard when the round is less than usual. A provision is also made to meet the case of excessive sheer, the usual sheer being put down at 18 in. per 100 ft. length, ships with less sheer than this would, consequently, gain a trifling advantage, but we are not prepared to urge this strongly as an objection to the rule, knowing that some eminent naval architects and authorities do not believe that sheer is any advantage at all. It would, perhaps, have been better to have provided for the case of ships with no sheer, as rules of freeboard should, as far as possible, not offer a bonus for any peculiarity of construction; indeed, the great objection to all rules which have yet been promulgated is that they do err in that respect. There is, however, one class of ships, small in numbers, but including several steamers of the largest size in which the depth wanted for the rule could not be obtained from the ship's register. Vessels having four decks, of which the upper is often a spar deck, only show two depths on the register, one being the depth to the second deck, the other the depth to the fourth, while the depth to the third deck, that from which freeboard is measured is not recorded at all.

If, for the purpose of the rule, the ship's register were completed so as to give a length, breadth, and depth, we should yet require the tonnage under the deck, from which the freeboard has to be measured. It would appear at first sight that there can be no difficulty in obtaining it, as indeed there is not in the majority of cases. In one important class of ships, in fact, in all ships with over two decks (not including, of course, a spar deck as one of the number), this quantity cannot be accurately obtained from the register; and in another numerous class of ships,

rapidly increasing in numbers, it cannot be obtained from the records at all. The register tonnage under deck is, in ships of more than one deck, the internal volume under the second deck from below. In the measurement of "spaces between decks," the thickness of the tonnage-deck is neglected, and thus a ship in which this deck is of wood will get a lower factor and a slightly less freeboard than when it is of iron. Although the cubic contents of the deck are, in some large steamers, as much as fifty register tons, this would have but a trifling effect upon the freeboard, and we only mention it because we are of opinion that it is exceedingly undesirable to discourage in any way the use of iron for a ship's middle deck; indeed, we should have much preferred a larger error in the other direction. The cases in which the rule is wholly inapplicable, so far as it depends upon register tonnage, is when a ship has only two decks, of which one is a spar deck. The freeboard then should be measured from the lower deck,—the "under-deck tonnage" of the register is the tonnage under the spar-deck. Supposing, however, that the length, breadth, depth, and tonnage obtained from the register were applicable for the purposes of the rule, as in many cases they certainly are, we are yet of opinion that it could not be relied upon as giving an exact measure of spare buoyancy. We have compared a ship of 200 tons, of a not very common—but, at the same time, not altogether exceptional type—with another of an opposite character, by reducing the sections of the latter to the size of the former while preserving the same form. The result is, that in two designs, fairly characteristic of ships already in existence, of precisely the same length, breadth, depth, and tonnage, the load-line obtained from the table gives a spare buoyancy of seven per cent. more in one case than in the other. The first-named ship has a *flare-out* side, with full water-lines above and fine below, the other a *tumble-home* side, with a comparatively fine deck-line, and full lines below. The ship which has most stability at extreme angles of inclination (provided the cargo be properly stowed), is, in opposition to all reasonable expectation, required to have the greatest reserve of buoyancy. When such discrepancies are discoverable in cases of ships actually in existence, what might we expect if the new rule should obtain so much general recognition that it should be considered worth while to design ships to evade it? From the results of our investigation of the proposed rule, we are forced to the conclusion that a satisfactory solution of even the geometrical part of the question must be sought in some other method than that adopted. An examination of the tables will show that a rule of freeboard depending upon depth alone could be framed, which, tempered by judgment, would not lead to results much more inaccurate than must follow from the use of the new tables, at least if they retain their present form. We think that if any rule of freeboard,

based upon spare buoyancy, were shown to be desirable, it would be better to calculate it for each ship separately than to depend upon the new tables, which, with their seeming exactness, are, after all, but a rough approximation to the truth, are only intended for the ordinary type of first-class ships, a class for which tables are altogether unnecessary, and are, therefore, wholly inapplicable in the cases of the very ships in respect of which questions will arise.

In the table for sailing ships, as we have remarked, the co-efficients of fineness for iron and wood ships are so used as to eliminate the error which is caused by using the registered breadth. We presume that the tables for steamers, in which there is no such difference, are intended for iron ships only, and that a note to that effect will be added in any reprint of them.

While on the subject of the difference between the tables for steam and sailing ships, we may notice that, for the same depth of hold in the smallest class of ship (7 ft. deep), the freeboard for steamers and for sailing ships is practically the same. For vessels 14 ft. deep, the steamer has about 8½ in. less freeboard, for 21 ft. depth a trifle less, and for 28 ft. depth of hold steamers and sailing ships are put down for nearly the same freeboard. It is a generally-received opinion that, as a rule, steamers require less freeboard than sailing ships, but everyone knows that small coasting ships must be excepted from this rule, and we suppose Lloyds' surveyors must have some good reason, which, however, we cannot guess at, for making the same exception in the case of very large ships.

We notice that a special provision is made to meet the case of Atlantic voyages in the winter months, and that extra freeboard required is more in proportion in small ships than in large ships. This regulation is in accordance with practical experience: but should not an opposite allowance be made to small vessels employed wholly in coasting voyages. There is a well-known class of small wooden ships, most strongly built, and perfectly safe, with much less freeboard than any recognized rule would give. We notice that for vessels of 7 ft. depth of hold, the smallest freeboard given is 1 ft. 3 in.; we are very much of opinion that if any such rule were applied to our small coasting vessels, a large number of them would have to be broken up, or sold to foreigners, and that many of our coasting steamers would cease to exist.

At the end of the tables for steamships we notice a number of provisions for allowances to be made in respect of erections upon the upper deck. A spar deck entitles a ship to a reduction of freeboard to the extent of one-half; an awning deck, three-tenths; a long poop, efficiently constructed, and covering the engine and boiler hatchways, one-tenth; and a full poop, one-fourth the length of the ship, or a long raised quarter deck, extending over engine and boiler hatchways, or a house in

connection with them, would be a sufficient ground for a reduction of one-fifteenth. It is much to be regretted that a definition of a *spar deck*, and also of an *awning deck*, is not given in the notes which accompany the tables; in the absence of any precise information as to the exact meaning put upon these terms by Lloyds' surveyors, and the extent to which their view of the subject would be accepted by other authorities, we are unable to form any estimate of the value of this portion of the rule. One objection, however, we must make, and that is, that it seems scarcely reasonable to make the same difference for a spar deck, whatever its height may be. It may be five feet and a-half high, or it may be eight feet; in either case, the freeboard is to be the same. We should also have been glad of more information as to what a properly constructed poop is supposed to be. Should it have an iron bulkhead at its fore end? water-tight iron doors? and provision for entering it from above in bad weather? Is not even then the advantage, or otherwise, of a poop dependent upon the character and construction of the hull of the ship? The necessity for these refinements in the new rules shows how utterly inapplicable general rules are.

The increase of freeboard, in proportion to the length of ships provided for in the tables, appears justifiable under the present system of iron shipbuilding. It has been suggested that the system of longitudinal framing, the advantages of which have been proved in its application to our large ironclads, ought to find more favour with the builders of large ocean steamers. If it were adopted, some authorities think that it would no longer be necessary to give ships additional freeboard in proportion to their length. We would commend to the surveyors of Lloyds', who have proved themselves well able to deal with the questions of the scantling of the various parts of iron ships, built upon the common plan, the consideration of this important subject. It has been said that such a system of framing would probably as much conduce to the safety of ocean steam traffic as would the most perfect rule of freeboard that could be devised.

Many of our nautical readers will have observed, on seeing the proposed rule of freeboard, that a clipper ship is to have eighteen inches less freeboard than an ordinary sailing vessel of the same depth of hold. It would not be comforting to go to sea in her under such conditions. In fixing the freeboard of sailing ships, one important consideration has been totally lost sight of, namely, the character of their masts and rigging. We have heard of cases of clipper ships being taken off passenger trades and loaded down to a deeper line in order that they might be made to pay under the altered circumstances. Before they could be made to behave well at sea with the new load line, however, their masts had to be taken out and lighter ones put in. If we divide ships into three

classes, as Mr. Duncan has, we shall have full, medium, and sharp. Now, the best and safest is the medium. Take a sharp ship and a medium ship of the same extreme dimensions, the medium ship will be the best and easiest ship at a deep draught; the sharp ship, if loaded deeper, or even as deep, would become uneasy and uncomfortable in a seaway, causing her to strain and endangering her spars. When the American clipper ships, and many of the Australian clippers were shut out of those trades, in consequence of the passenger trade falling off, it was found necessary in many of them to reduce the spars. In one ship that we know of, the lower masts were reduced five feet on two different occasions—*i.e.*, ten feet in all, and she sailed better afterwards. These ships had been "flying light" in the passenger trade, and when afterwards loaded as carriers, they had to be altered. It is proved beyond the possibility of reasonable question that extreme clipper ships, if loaded deep, possess no advantages whatever over medium ships as regards speed; and yet these tables encourage directly the loading of "clippers" below the loading of "mediums"—in other words, that a "fine" ship, of which the ends are less waterborne, and in which, in consequence of the leverage of her masts and spars, has a tendency to "bury" more than the "medium," is to have a direct advantage over the "medium" by being encouraged to load deeply.

There is one question, which we believe is of considerable importance, but which has, nevertheless, been ignored in all attempts to frame rules for freeboard. It has never been proposed to regulate the trim, although there is every reason to believe that an improper excess of draught at one end of the ship has, in some cases, caused the loss of ships. A rule of freeboard offers special inducement for bad trim. It is well known that most ships are fuller at and above the water-line aft than they are forward, and that, consequently, if a ship be immersed deeper aft than forward, while the same mean draught is retained as when she was on an even keel, a considerable amount of extra displacement will be gained. One danger to which vessels, having their bow out of the water and their stern so much immersed, is that when a sea strikes on the side of the bow, the vessel there has so little hold of the water, that serious lateral strains are thrown upon the whole structure. There is, besides, the great danger of their being pooped by a heavy sea. Disasters of this character are likely to be greatly increased by the efforts made by needy or unscrupulous owners to secure as much carrying capacity as possible with a fixed authoritative freeboard.

The scale of freeboard which we have been considering is for first-class ships, and there is no information given as to the principles which are to regulate its modification to suit the very large number of ships which are not first-class, or which may not be deemed to be of the

ordinary type. It seems to us that no rule of freeboard can be considered complete which does not deal with this most difficult and most necessary part of the question. This consideration leads us on to the question of the possibility of advisability of regulating freeboard, with regard to form and size only, and omitting from the question altogether the nature of the ship, and the stowage of her cargo, and her rig. It is hardly necessary to enlarge upon this branch of the subject here. In our former articles upon the freeboard question we have given our reasons for the view we have always advocated, that to establish a hard and fast rule of freeboard, while neglecting to take such precautions as would ensure good stowage and other conditions of seaworthiness, would be to create a feeling of false security much worse than the present state of things. But it will be said that Lloyds' new rule is not intended for a hard and fast line, and that all such pretensions are specially disclaimed. We repeat that a standard emanating from such an authority as the Committee of Lloyds' Register has, unless stoutly resisted at first, an inevitable tendency to become a hard and fast line. This rule may possibly, before it is many months old, be put to the bad service of furnishing a cloak for some unprincipled shipowner, who may comply with its letter, in order that he may be enabled to evade its spirit.

In closing this article we record our own conviction—viz., that all the old-fashioned load line rules are inapplicable to the majority of modern ships; that they generally require excessive freeboard; are a dead imposition on shipowners, and of no real benefit to the sailor, and that the fact that many of our short voyage steamers go, and have for years safely gone, with $1\frac{1}{2}$ in. of side to the depth of hold, is a proof that if freeboard is an important element of safety in some cases, it is in other cases, and for short voyages under certain conditions and circumstances, the least important element.

Arctic Relics.—Captain Potter, of the American whaling barque *Glacier*, which arrived at New Bedford on September 26th, after a two years' voyage, has brought some silver spoons and forks, bearing the crest of Sir John Franklin and some other English families. He obtained them from the Esquimaux in Repulse Bay.—The engineer and surgeon of the whaler *Camperdown*, while exploring near Port Leopold, came upon a small cemetery, consisting of six graves, each marked by an oaken tablet, bearing a brass plate with an inscription, showing that the persons buried below belonged to the crews of H.M.S. *Investigator* and *Enterprise*, which were sent out in 1848, under the command of Sir J. C. Ross and Captain Bird, in search of Sir John Franklin.

MONTHLY ABSTRACT OF NAUTICAL NOTICES.

No.	Place.	Subject.
225	Mediterranean—Italy—Spezzia Gulf	Construction of breakwater.
226	Nova Scotia—Halifax	Establishment of a Lightvessel off.
227	Australia—N.E. Coast—Cape Melville	Discovery of a Danger near.
228	Australia—Queensland—Burnett River	Establishment of a Temporary Light
229	Australia—Queensland—Percy Isles	Discovery of a Danger near.
230	Australia—Victoria—South Channel	Exhibition of Leading Lights.
231	Gulf of Finland—Stirs Point	Particulars of Light exhibited.
232	England—East Coast—Yarmouth and Lowestoft	Alteration in Buoyage.
233	England—East Coast	Alteration in Smith Knoll and South Dowsing Buoys.
234	Bay of Fundy—Basin of Mines—Walton Harbour	Establishment of a Light.
235	South Australia—Spencer Gulf	Discovery of a Rock.
236	South Australia—Port Adelaide	Intended Alteration in Lights.
237	Canada—Lake Superior—St. Mary River—Point aux Pins	Establishment of a Light.
238	Canada—Lake Superior—Corbay Point	Establishment of a Light.
239	Canada—Lake Superior—Point Porphyry	Establishment of a Light.
240	St. Lawrence River—Matane River	Establishment of a Light.
241	Red Sea—Suez Bay—Newport Rock	Proposed Alteration in Marking.
242	Eastern Archipelago — Flores Sea — Boeton Passage	Discovery of a Sunken Reef.
243	India—West Coast—Rájapur River	Establishment of a Light.
244	China—Yangstze River—Wusung Light	Alteration in Light.
245	Adriatic—Morlacca Canal—Novi	Establishment of Harbour Light.
246	St. Lawrence Gulf—Cape Gaspe	Establishment of a Light.
247	Brazil—Stapuan Point	Establishment of a Light.
248	New Brunswick — Grand Lake — Robertson Point	Establishment of a Light.
249	New Brunswick—Grand Lake—Fanjoy Point	Establishment of a Light.
250	Gulf of Mexico—Florida—Dog Island	Destruction of Lighthouse.
251	China Sea—North Natuna Passage	Discovery of a Sunken Danger.
252	Newfoundland—Cape Ray	Establishment of a Fog Signal.
253	Norway—West Coast—Obrestadbrækka	Establishment of a Light.
254	England—Thames Entrance—Shivering Sand	Alteration in Buoy.
255	Ireland—East Coast—Codling Bank	Alteration in Position of Lightvessel.
256	South America—Guayaquil River—Arena Point	Establishment of a Light.
257	Adriatic.—Carlopago	Establishment of a Harbour Light.
258	Adriatic—Port Rogosnizza	Establishment of a Harbour Light.
259	Spain—North Coast	Caution as to Exhibition of Lights.
260	Adriatic—Trieste Gulf—Port Grado	Establishment of Leading Lights.
261	Adriatic—Trieste Gulf—Pirano Bay—S. Bernandino Point	Establishment of a Light.

NAUTICAL NOTICES.

225.—MEDITERRANEAN.—*Italy.*—*Spezzia Gulf.*—The breakwater, which is intended to protect the maritime arsenal at Spezzia, is now in progress of construction. It will be situated between the Forts Santa Maria and Santa Theresa; it is to have a mean width of 118 feet at the base, 20 feet at the upper part, and will be 3 feet above the mean level of the sea. The passage at its western end will be 2 cables in breadth and 1 cable at its eastern end. Buoys have been placed at 6 cables, 8 cables, and 11 cables respectively from Fort Santa Maria, as also masts on the foundations at 6 and 8 cables respectively from the fort; these masts, by day, carry a green flag, and by night, exhibit a light. Other masts and lights will be erected and exhibited as the work advances. A light will also be exhibited on Fort Santa Maria.

Note.—Vessels entering the gulf are recommended to pass at a distance of about 3 cables from Fort Santa Maria.

226.—NOVA SCOTIA.—*Halifax.*—A lightvessel, exhibiting two lights, is placed off the entrance of Halifax harbour, to facilitate making that port. The lights are *fixed white* lights 39 feet apart, and 31 feet above the sea. They should be seen 11 miles. The vessel has two masts, is painted red, with the word *Halifax* painted in white on both sides. A red ball is fixed at each mast-head. She is moored in 45 fathoms, with Sambro light bearing N.W. $\frac{1}{4}$ W. 4$\frac{1}{2}$ miles, Chebucto head light N. $\frac{1}{4}$ W. $6\frac{1}{10}$ miles, Devil island light N. by E. $\frac{3}{4}$ E. (easterly) $10\frac{6}{10}$ miles, and Portuguese buoy N. $\frac{3}{4}$ E. (easterly) 8 miles. Position, lat. 44° 24′ 20″ N., long. 63° 27′ 30″ W. In thick or foggy weather and snow storms, a steam fog-whistle will be sounded for *twelve seconds* in each minute, leaving an interval of *forty-eight seconds* between each blast.

Note.—Vessels approaching from the westward will, by steering for the lights on an E. by N. $\frac{1}{2}$ N. bearing, pass 3$\frac{1}{4}$ miles outside S.W. breaker, and from the lightvessel, a course N. $\frac{1}{4}$ E. will lead rather more than half a mile from Chebucto head, and mid-channel between the Litchfield and Neverfail shoals, and in a fairway up the harbour.

227.—AUSTRALIA.—*North-east Coast.*—*Inner Route.*—*Cape Melville.*—The master of the schooner *Hannah Broomfield* reports having struck on a mushroom-shaped coral patch, in the inner route, near Cape Melville. This danger, *Broomfield rock*, has about 4 feet over it at low water, and 15 fathoms close to; from it Cape Melville bears W. by N. $\frac{1}{2}$ N., and Barrow point S. by E. These bearings place the danger in lat. 14° 12′ 40″ S., long. 144° 40′ 30″ E.

228.—AUSTRALIA.—*Queensland.*—*Burnett River.*—A temporary *fixed* white light, visible seaward between the bearings S.E. and N.W., is

now exhibited from the pilot station on the south head of this river, which should be seen 9 miles. Position, lat. 24° 45′ S., long. 152° 25′ E.

229.—AUSTRALIA.—*Queensland.—Percy Isles.*—The master of the vessel *Enterprise* reports having at low water observed breakers upon what appeared to be a sunken danger between Percy Isles and h. h. group, and nearly midway between Sphinx islets and h. 2 island. Position, Pine peak E. by N. ¾ N., and h. 2 island bluff W.S.W. (southerly) and Prudhoe island nearly in a line with the south-east islet of the Beverley group N.W. by W. ¼ W. These bearings place the reported danger in lat. 21° 34′ 20″ S., long. 150° 4′ 30″ E.

230.—AUSTRALIA.—*Victoria.—South Channel.*—With reference to Nautical Notice No. 88 (May), respecting the leading lights for this channel, information has been received that the eastern light is now exhibited on the jetty at Dromana, and is a *fixed green* light, visible 4 miles. The erection of the pile lighthouse at No. 10 buoy has necessitated the removal of that buoy.

231.—GULF OF FINLAND.—*Stirs Point.*—In accordance with Nautical Notice No. 202 (November), the following information, relative to the light on that point, has been received. The light is a *fixed white* light of the second order, visible between the bearings S.E., round by north to N.W. by W., elevated 117 feet above the sea, and should be seen 12 miles. The tower, of stone, is 46 feet high, painted white, and attached to the keeper's dwelling. Position, lat. 60° 10′ 30″ N., long. 29° 2′ E.

Note.—This light will facilitate the navigation of the gulf at its narrowest part, and also for entering and leaving Biörkö sound.

232.—ENGLAND.—*East Coast.—Yarmouth and Lowestoft.*—In consequence of the shifting of the sands in Yarmouth and Lowestoft roads, the following alteration in the buoyage has been made, viz.:—

South Holm Buoy has been moved W. by S. 1½ cables, and lies in 13 feet, with the following marks and bearings:—

Lowestoft church just open eastward of St. John's church	N. ¼ E.
Pakefield mill and barn in line ...	N.N.W. ¾ W.
Kessingland church tower its length westward of the old Coastguard houses	W. by S. ¼ S.

East Newcome Buoy has been moved West, three quarters of a cable, and lies in 18 feet, with—

Lowestoft church just open westward of St. John's church	N. ¼ E.

Pakefield mill, its length open northward of Pakefield barn ... ... N.W. by N.
South Newcome buoy ... ... S.S.W. $\frac{3}{4}$ W. 2 miles.

Holm Hook Buoy has been moved W. by S. a quarter of a cable, and lies in 4 fathoms, with—

The Clock cupola at Lowestoft harbour in line with the west end of the Reading room on the South pier ... North.
Pakefield old lighthouse in line with the northernmost of six trees ... ... W. $\frac{1}{4}$ N.
N.E. Newcome buoy ... ... N.E. by N. (easterly) $1\frac{1}{2}$ miles.

Inner Shoal Buoy has been moved East, three quarters of a cable, and lies in 20 feet, with—

Lowestoft church in line with the Gas-works chimney ... ... N.W. $\frac{1}{2}$ N.
The Clock cupola midway between the two Look-outs on the north side of Lowestoft harbour ... ... W. $\frac{1}{4}$ N.
North Newcome buoy... ... ... S.W. $\frac{1}{2}$ W. $\frac{1}{2}$ mile.
Lowestoft low lighthouse ... ... N. by W. $\frac{4}{10}$ths of a mile.

North Corton Buoy has been moved N.N.W. one cable, and lies in $4\frac{1}{4}$ fathoms, with—

Trinity Look-out in line with the southernmost chimney at the Militia barracks at Yarmouth ... ... N.N.W. $\frac{1}{2}$ W.
St. Nicholas lightvessel ... ... N. $\frac{1}{2}$ W. $\frac{9}{10}$ths of a mile.
South Scroby buoy ... ... E.S.E. (southerly) $\frac{1}{2}$ mile.

Caistor Elbow Buoy has been moved N.N.E. $\frac{1}{2}$ E. 3 cables, and lies in $9\frac{1}{2}$ fathoms, at a distance of a cable from the dry sand, with—

St. Peter's and Roman Catholic churches at Yarmouth in line ... ... S.W. $\frac{1}{2}$ S.
East Caistor church tower twice its length southward of Caistor look-out N.W. by W.
South Caistor buoy ... ... S.W. $\frac{1}{2}$ S. 1 mile.
West Scroby buoy ... ... S.E. by S. $\frac{9}{10}$ths of a mile.

Middle Caistor Buoy has been moved N.E. by N. 2 cables, and lies in $8\frac{1}{2}$ fathoms, at a distance of one cable from the dry sand, with—

Gorleston south mill in line with Wellington pier head at Yarmouth ... S.S.W. $\frac{3}{4}$ W.
Middle Scroby buoy ... ... E.S.E. $\frac{8}{10}$ths of a mile.
North Caistor buoy ... ... N. by E. $\frac{7}{10}$ths of a mile.

N.B.—All the depths given above are at low water springs.

233.—England.—*East Coast.—Smith Knoll* and *South Dowsing Buoys.*—Smith's Knoll buoy has been moved to the eastward of the sand into 20 fathoms at low water springs. South Dowsing buoy has been changed from a conical buoy to a *can* buoy.

234.—Bay of Fundy.—*Basin of Mines.—Walton Harbour.*—A light is now exhibited from a lighthouse on the north side of the entrance to this harbour. The light is a *fixed red* light, 60 feet above the water, and should be seen 10 miles. The tower is a square wooden building, 20 feet high, and painted white. Position, lat. 45° 14′ N., long. 64° 0′ 45″ W.

235.—South Australia.—*Spencer Gulf.*—Masters of vessels trading to and from Port Lincoln, Tumby bay, and Port Augusta, are informed that it has been reported that a rock, on which the cutter *Secret* was lost, exists about three miles north of Point Bolingbroke, and one mile off the headland. As this danger lies directly in the track of vessels trading to and from Port Lincoln and ports to the northward, vessels should give the reef a wide berth.

236.—South Australia.—*Port Adelaide.*—On and after January 1st, 1874, a *fixed red* light will be exhibited from the Glenelg Jetty in lieu of the present fixed green light. On and after January 1st, 1874, a *fixed green* light will be exhibited from the Semaphore Jetty, in lieu of the present fixed red light. Early in 1874, a *revolving white* light will be exhibited from the Port Adelaide lighthouse, in lieu of the present fixed white light.

237.—Canada.—*Lake Superior.—St. Mary River.—Point aux Pins.*—A *fixed white* light is now exhibited on this point. It is elevated about 30 feet above the river, and should be seen 8 miles. The tower is a square wooden building, 23 feet high, and painted white. Position, lat. 46° 28′ 30″ N., long. 84° 41′ W.

238.—Canada.—*Lake Superior.—Corbay Point.*—A light is now exhibited on Corbay Point, north side of the entrance of Batcheewanaung bay. The light is a *fixed white* light, elevated about 77 feet above the lake, and should be seen 14 miles. The tower is a wooden building, 63 feet high, attached to the keeper's dwelling, and painted white. Position, lat. 46° 54′ N., long. 84° 50′ 30″ W.

239.—Canada.—*Lake Superior.—Point Porphyry.*—A *fixed white* light is now exhibited on Point Porphyry, east side of the entrance of Black bay. It is elevated 56 feet above the lake, and should be seen 13 miles. Position, lat. 48° 21′ N., long. 88° 51½′ W.

240.—St. Lawrence River.—*Matane River.*—A light is now exhibited at Matane, south shore of St. Lawrence river. The light is a *fixed red* light, elevated 65 feet above high water, and should be seen 10 miles. The tower is a square wooden building, 28 feet high, attached

to the keeper's dwelling, and painted white. Position, lat. 48° 52′ N., long. 67° 33′ W.

241.—Red Sea.—*Suez Bay.—Newport Rock.*—On the 31st December, 1873, the buoy now marking the Newport rock will be removed, and the lightvessel now marking the shoal water off Kadd-el-Marakeb will be moored off the Newport rock.

Note.—Vessels must pass to the westward of the lightvessel.

242.—Eastern Archipelago.—*Flores Sea.—Boeton Passage.*—Information has been received of the existence of a sunken coral reef in the Boeton passage, about 6 miles off the south-east coast of Boeton, and on which the brig *Penguin* lately struck. The reef is described as extending N.N.E. and S.S.W. 8 or 9 miles. The shoalest water is on the south end, where the vessel struck in 1½ fathoms at low water. No bottom was found at 120 fathoms a short distance from this spot. Position of shoalest part, as given, lat. 5° 39′ S., long. 122° 59′ E.

243.—India.—*West Coast—Rájapur River.*—A *fixed white* light is now exhibited on Keeva hill, near the south point of Rájapur river. It is elevated 75 feet above high water, and should be seen 9 miles. The lighthouse is 21 feet high. Position, as given, lat. 16° 36′ 10″ N., long. 73° 18′ 30″ E.

Note.—This light is not exhibited during the south-west monsoon, or between the 11th June and 9th September inclusive.

244.—China.—*Yangtsze River.—Wusung Light.*—The following alteration has been made in this light:—That portion of the red light, extending from S.W. by W. round by south to the river bank, is discontinued, and, instead thereof, a *green* light is exhibited between S.W. by W. and S. by W., and a white light from S. by W., extending to the river bank. The sector of white light, marking the channel of the Wusung river, as also the red light as seen to the southward of the channel, remain as heretofore. The tower is painted black.

245.—Adriatic.—*Morlacca Canal.—Novi.*—A *fixed red* light is now exhibited, 12 feet above the sea, at the extremity of the mole, at Novi. It should be seen three miles. Position, lat. 45° 7′ 30″ N., long. 14° 47′ E.

246.—St. Lawrence Gulf.—*Cape Gaspe.*—A *fixed red* light is now exhibited on this Cape, elevated 350 feet above high water, and should be seen 12 miles. The lighthouse is a square wooden building, 30 feet high, painted white, and attached to the keeper's dwelling. Position, lat. 48° 45′ 15″ N., long. 64° 9′ 15″ W. A steam fog-whistle is being erected in the valley, near the lighthouse, and which will shortly be put in operation. Due notice will be given of the nature of the fog-signal.

247.—Brazil.—*Stapuan Point.*—With reference to Nautical Notice No. 169 (September), further information has been received—viz., that

the light is erected on the *Piraboca* rock, about one cable from the point. The light is a *fixed white* light, elevated 68 feet above the sea, and should be seen 14 miles. Position, lat. 12° 58′ S., long. 38° 21′ W.

248.—New Brunswick.—*Grand Lake.—Robertson Point.*—A *fixed white* light is now exhibited on this point 16 feet above the lake, and should be seen 10 miles. Position, lat. 45° 58′ N., long. 66° 13′ W.

249.—New Brunswick.—*Grand Lake.—Fanjoy Point.*—A *fixed white* light is exhibited on this point 16 feet above the sea, and should be seen 10 miles. Position, lat. 45° 55′ N., long. 66° 4′ W.

250.—Gulf of Mexico.—*Florida.—Dog Island Lighthouse.*—This lighthouse has been destroyed by a hurricane, and the light, in consequence, is temporarily discontinued.

251.—China Sea.—*North Natuna Passage.*—A sunken danger has been discovered in the channel, north of the Great Natuna island, and on which the ship *Louise et Marguerite* lately touched. The vessel at the time of striking drew 15 feet, and then obtained a sounding of 11 fathoms. Bearings were taken immediately after the vessel cleared the danger, when the rock lying 2½ miles south of the S.E. point of Pulo Laut, bore north (westerly) and the south-west point of Pulo Laut N.N.W. ¼ W., which bearings place the danger approximately in lat. 4° 34′ 40″ N., long. 107° 39′ 40″ E.

252.—Newfoundland.—*Cape Ray.*—A steam fog-whistle has been established at Cape Ray, at a distance of a quarter of a mile east of the lighthouse. In thick weather, fogs, and snow storms, the whistle will be sounded for *ten seconds* in each minute, leaving an interval of *fifty seconds* between each blast. Position, lat. 47° 37′ N., long. 59° 17′ 45″ W.

253.—Norway, West Coast.—*Obrestadbrekka.*—A *fixed and flashing* white light of the third order, showing a flash *every half minute*, is now exhibited at this place. It is elevated 109 feet above the level of the sea, and should be seen 16 miles. The lighthouse, of grey stone, has the appearance of an ordinary dwelling-house, the light being exhibited from the gable end facing the sea.

N.B.—The light is obscured to the southward from a distance of about a mile from the land off the point near Haar.

254.—England.—*Thames Entrance.—Shivering Sand buoy.*—In order to facilitate the navigation at the entrance of the river, the buoy on the Shivering Sand will, on or about the 7th December, 1873, be changed to a large *bell* buoy, painted in *black* and *white vertical stripes*, and surmounted by a beacon cage.

255.—Ireland.—*East Coast.—Codling Bank.*—In consequence of the unevenness of the bottom on which the lightvessel is moored, and for the safety of the vessel, the following alteration will be made in her position

on the 1st December, 1873, viz. :—The lightvessel will be moored S. by W. 1 mile, and will be moored in 9 fathoms at low water springs. The new position will be in lat. 53° 3′ 40″ N., long. 5° 45′ 25″. W.

256.—South America.—*West Coast.—Guayaquil River.—Arena Point.* —A *revolving red* light of the fourth order, visible *sixteen seconds*, and obscured *forty-four seconds* in each minute, is now exhibited on Point Arena, south-west point of Puna island. It is elevated 59 feet above the sea, and should be seen 12 miles. The tower is square, and is close to the water's edge. Position, as given, lat. 3° 1′ 52″ S., long. 80° 05′ 35″ W.

257.—Adriatic.—*Carlopago.*—A *fixed white* light is now exhibited at the extremity of the mole at this port, elevated 16 feet above the sea, and should be seen 5 miles. Position, lat. 41° 34′ 30″ N., long. 15° 4′ 30″ E.

Note.—During northerly gales the light cannot be exhibited.

258.—Adriatic.—*Port Rogosnizzo.*—A *fixed white* light of the fourth order is now exhibited on Muls rock at this port, elevated 77 feet above the sea, and should be seen 13 miles. Position, lat. 43° 31′ N., long. 15° 55′ E. The tower is attached to the keeper's dwelling, which is painted white.

259.—Spain.—*North Coast.*—Mariners are cautioned that, at this time, the regular exhibition of lights on this coast is uncertain.

260.—Adriatic.—*Trieste Gulf.—Port Grado.*—Three *fixed white* lights are exhibited from lamp posts, to indicate the entrance of this port. They are 16 feet above the sea, and visible 2 miles.

261.—Adriatic.—*Trieste Gulf.—Pirano Bay.—S. Bernandino Point.* —A *fixed white* light is exhibited from a house on the extremity of the little mole. It is 33 feet above the sea, and should be seen 8 miles. Position, lat. 45° 31′ N., long. 13° 34½′ E.

Charts, *&c., Published by the Hydrographic Office, Admiralty, to the end of November*, 1873, *and Sold by the Agent, J. D. Potter*, 31, *Poultry, and* 11, *King Street, Tower Hill.*

No.	
1195	Spain—Port Barcelona.
759	East and West Coasts of Madagascar.
760	South portion of ditto.
272	South Coast of Newfoundland—Burges Islands.

OUR OFFICIAL LOG.

NAMES OF VESSELS TO WHICH PERMISSION HAS BEEN ACCORDED FOR CHANGE OF NAME.—*Fiery Cross*, of London, to *Suffolk*, of London; *African*, of Bristol, to *Pico*, of Liverpool; *St. Thomas*, of Liverpool, to *Etna*, of Liverpool; *Lagos*, of London, to *Andes*, of Liverpool; *Mandingo*, of Hull, to *Alps*, of Liverpool.

BOARD OF TRADE CIRCULARS.

EXAMINATIONS FOR CERTIFICATES OF COMPETENCY AS MASTERS OF PLEASURE YACHTS.—The following are the qualifications required for Masters of Pleasure Yachts:—*In Navigation.*—He must understand the first five rules of arithmetic, and the use of logarithms. He must be able to work a day's work complete, including the bearings and distance from one port to another, by Mercator's method; to correct the sun's declination for longitude, and find his latitude by meridian altitude of the sun. He must be able to observe and calculate the amplitude of the sun, and deduce the variation of the compass therefrom. He must know how to lay off the place of the ship on the chart, both by bearings of known objects, and by latitude and longitude. He must be able to determine the error of a sextant, and to adjust it; also to find the time of high water from the known time at full and change. He must be able to observe azimuths and compute the variation; to compare chronometers, and keep their rates, and find the longitude by them from an observation of the sun; to work the latitude by single altitude of the sun off the meridian; and be able to use and adjust the sextant by the sun. He must be able to find the latitude by a star, &c. He will be required to answer in writing certain questions as to the nature of the attraction of the ship's iron upon the compass, and as to the method of determining any error arising therefrom. He will be examined in so much of the laws of the tides as is necessary to enable him to shape a course, and to compare his soundings with the depths marked on the charts. He must possess a sufficient knowledge of what he is required to do by the Merchant Shipping Acts, and possess a knowledge of the measures for preventing and checking the outbreak of scurvy on board ship. He must be acquainted with the leading lights of the channel he has been accustomed to navigate, or which he is going to use. *In Seamanship.*—He must understand the measurement of the log line, glass, and lead line; and pass a satisfactory examination in the green-covered pamphlet,

issued by the Board of Trade on the rule of the road, as regards both steamers and sailing vessels, and the lights and fog-signals carried by them, and will also be examined as to his acquaintance with "the International Code of Signals for the use of all Nations." He must know how to moor and unmoor, and to keep a clear anchor; to carry out an anchor. He will also be questioned as to his knowledge of the use and management of the mortar and rocket lines in the case of the stranding of a vessel; as to managing a ship in stormy weather, taking in and making sail; casting a ship on a lee-shore; and securing the masts, in the event of accident to the bowsprit. He will be examined as to his competency to construct jury rudders and rafts; and as to his resources for the preservation of the ship's crew in the event of wreck. In cases where an applicant has only served in a fore and aft rigged vessel, and is ignorant of the management of a square rigged vessel, he will only obtain a certificate on which the words "*fore and aft rigged vessel*" will be written. This certificate does not entitle him to command a square rigged ship. All candidates presenting themselves for examination for the first time will be required to give short definitions of so many of the terms contained in the list (A), appended to Circular 517, as may be marked with a cross by the Examiner; also, at least eight of such of the questions in list (B), appended to the same Circular, as may be marked with a cross by the Examiner.—*Circular No.* 659, *October*, 1873.

Private Signals.—The Board of Trade hereby give notice, that looking to the importance of the minute gun and the rocket as signals of distress, the Board do not intend to register as a private night signal any signal in which a gun is used. Further, that they do not intend to register as a private night signal any signal in which rockets are used with the exception only of signals made at the three following places, viz.—(1.) Off Moville, and at the entrance of Lough Foyle in the County of Donegal; (2.) Off Browhead in the County of Cork; and (3.) Off Queenstown Harbour in the County of Cork. The registration of rockets as private signals except at the three places named will be refused in future; and the registration already effected of any signals to be made with guns or rockets at any places other than the three places previously named, will be cancelled on the 30th of the present month. The minute gun and the rocket and flames are to be deemed to be night signals of distress for British ships, whether used on the coasts of the United Kingdom or on the high seas.—*Board of Trade, Marine Department, November*, 1873.

BOARD OF TRADE INQUIRIES AT HOME.

133. *Biafra*, of Teignmouth, stranded about two cables' length from Ramsgate Pier, 7th June. Inquiry ordered 24th June. Proceedings pending.

143. *Bridemaid*, schooner, of Jersey, stranded, 2nd June, off Barfleur Lighthouse. Inquiry ordered 1st July. Proceedings pending.

156. *Valetta*, of Newcastle, leaky in lat. 24° 32′ S., long. 54° 10′ E., 7th March. Inquiry ordered 19th July, but subsequently abandoned.

157. *Henry Woolley*, of Borrowstoness, foundered 150 miles E. of the Isle of May, on 27th June. Inquiry ordered 22nd July, but subsequently abandoned.

170. *Eleanor Alice*, of Beaumaris, sprung a leak and foundered off Porthcain, 21st July. Inquiry ordered 13th August, and held Nov. 6, at Carnarvon, before H. Hugh, Esq., J.P., and G. R. Rees, Esq., J.P., with Captain Hight and Commander Knox as nautical assessors. Master was found in default, and his certificate suspended for six months from the 6th November.

186. *Abbots Reading*, of Liverpool, stranded in lat. 62° 55′ N., long. 20° 16′ E. (Gulf of Bothnia), on 28th July. Inquiry ordered 12th September. Proceedings pending.

188. *Benachie*, s.s., of Aberdeen, foundered in the Strait of Gibraltar, 3rd August. Inquiry ordered 18th September, and held at Aberdeen on the 25th September, before J. C. Thompson, Esq., J.P., and Col. J. Cadenhead, J.P., with Captains Nicholas and Grant as nautical assessors. Loss probably due to the practice of overloading the vessel on her homeward voyages. Officers exonerated.

190. *South*, s.s., of Liverpool, stranded off Arzila, 10th August. Inquiry ordered 20th September, and held 21st October, at Liverpool, before T. S. Raffles, Esq., stipendiary magistrate, with Captains Hight and Grant as nautical assessors. Vessel was recklessly navigated, lead not used, though land was seen shortly before casualty occurred. Master's certificate suspended for twelve months.

192. *Benwell*, s.s., of Newcastle, in collision with a fishing vessel, 24th August, near Elbe lightship. Inquiry ordered 22nd September, and held 13th October at South Shields, before J. F. Spence, Esq., J.P., and Jacob Burnett, Esq., J.P., with Captains Forster and Wilson as nautical assessors. There was a discrepancy in the evidence as to whether the smack had a light. Master and officers of *Benwell* exonerated.

194. *Senior*, of Sunderland, foundered, 14th July, in lat. 29° 44′ S., long. 40° 15′ W. Inquiry ordered 22nd September, and held at Sunderland, 9th and 10th October, before E. T. Gourley, Esq., M.P., and

G. R. Booth, Esq., J.P., with Captains Forster and Wilson as nautical assessors. Court found the master in default for the abandonment of the ship, and suspended his certificate for three months from the date of inquiry.

195. *Wallamo*, foundered in the North Sea, 16th September. Inquiry ordered 22nd September, and held at Hull, on the 3rd October, before W. Wrangham, Esq., stipendiary magistrate, with Captains White and Oates as nautical assessors. Certificates of master and mate suspended for six months after 2nd October—(1) For default in not ascertaining the extent of damage; (2) for not trying to rescue cargo and steady the ship; (3) for unjustifiable haste in abandoning her. Conduct of chief officer and carpenter in quitting ship by first boat severely censured by Court. Vessel unseaworthy, cargo insufficiently secured.

196. *Brownlow*, s.s., of Hull, foundered off Spurn, 5th September. Inquiry ordered 22nd September, and held 17th October, at Hull, before W. Wrangham, Esq., stipendiary magistrate, with Captains White and Oates as nautical assessors. Vessel lost through damage caused by striking her anchor against the dock wall. Certificate of mate suspended for twelve months from 17th October, for not cautioning master of above circumstance (being made aware of it while in port) and for remaining on board the *Cambria* in a state of liquor. Master's conduct in remaining by his vessel highly commended; that of second mate and crew in not returning to the *Brownlow* considered an aggravated case of desertion.

200. *Nancy*, of Carnarvon, on fire E. of Bardsey Island, 9th September. Inquiry ordered 29th September. Proceedings pending.

201. *Orwell*, of St. Ives, foundered W. of Bill Buoy, 10th September. Inquiry ordered 12th September, but subsequently abandoned.

202. *Aulaby*, s.s., of Hull, stranded W. of Island of May, 23rd August. Inquiry ordered 29th September. Proceedings pending.

203. *Gem*, of Wexford, stranded on Dogger Bank, Wexford, 4th September. Inquiry ordered 1st October, and held at Wexford, 17th and 18th October, before E. F. G. Ryan, Esq., resident magistrate, and A. N. King, Esq., J.P., with Captains Nicolas and Sceales as nautical assessors. Court found master culpable in having recklessly navigated the vessel and in omitting to show lights for assistance. As he held no certificate the Court could only order him to pay a portion of the costs (£5).

204. *Coquette*, of Ramsey, stranded about one mile S. of Ramsey Harbour, 13th September. Inquiry ordered 1st October, and held at Liverpool, 14th October, before T. S. Raffles, stipendiary magistrate, with Captains Grant and Hight as nautical assessors. Vessel unseaworthy, put to sea very heavily laden. Magistrate left it to the Board

of Trade to consider whether it was not a case for proceedings under the Merchant Shipping Act, 1871.

205. *Lizzie*, s.s., of London, stranded half a mile S. of St. Mary's Isle, 19th September. Inquiry ordered 2nd October, and held at South Shields, 11th October, before E. Shotton, Esq., J.P., and J. B. Bramwell, Esq., J.P., with Captains Forster and Wilson as nautical assessors. Casualty attributed to insufficient use of lead. Court suspended master's certificate of service for six months from 11th October.

206. *May Queen*, of Grimsby, in collision with *Vivid*, of Hull, off Flamboro' Head, bearing W. fifty miles from Spurn, 4th September. Inquiry ordered 2nd October, and held at Hull, before H. Bennett, Esq., J.P., and J. Skelton, Esq., J.P., with Captains Nicolas and Oates as nautical assessors. Acting mate of *Vivid* to blame. Court being obliged to take his evidence could not punish him, but felt they could not too strongly censure his gross negligence.

208. *Woodville*, of Lynn, foundered on Swadman Reef, Fern Island, 21st September. Inquiry ordered 2nd October, and held at Lynn, 15th October, before J. O. Smetham, Esq., Mayor, and George Holditch, Esq., J.P., with Admiral Powell and Captain Harris as nautical assessors. Vessel lost through default of master. As he held no certificate, Court could only express its determination to have suspended it had he held one.

209. *Far West*, of North Shields, stranded off the Tytters, 8th August. Inquiry ordered 4th October, but subsequently abandoned.

210. *Penrhyn Castle* and *Great Western* in collision ¼ mile off St. Anne's Head, 30th September. Inquiry ordered 4th October, and held 27th and 28th October at Milford, before T. T. Jackson, Esq., J.P., R. Carow, Esq., J.P., and T. Scone, Esq., J.P., with Captains Steele and White as nautical assessors. Evidence conflicting. Court considered the master of the *Penrhyn Castle* in default for not having kept clear; but in consideration of his good character suspended his certificate for six months only from 28th October.

211.—*Canadian*, s.s., of North Shields, stranded on the Maydulse Rocks, Firth of Forth, 16th September. Inquiry ordered 4th October, and held 15th to 17th October, at South Shields, before J. F. Spence, Esq., J.P., and E. Sholton, Esq., J.P., with Captain Forster, R.N., and Captain Wilson as nautical assessors. Court considered the master's theory of the casualty being the result of an error of judgment not supported, and that vessel had been lost through careless navigation. His certificate was suspended for six months, and he was sentenced to pay costs of inquiry, amounting to £20.

212. *Maria Lee*, of Bridgewater, explosion, Long Reach, London River, 30th June. Inquiry ordered 6th October, and held at Greenwich,

before J. H. Patteson, Esq., stipendiary magistrate, with Admiral Powell and Mr. W. Darley, as nautical assessors. Master exonerated from all blame, and his certificate returned.

213. *Kwangchow*, s.s., stranded 8th August, off Cape Guardafui. Inquiry ordered 8th October. Proceedings pending.

214. *Breeze*, of Swansea, foundered and abandoned 23rd August, in lat. 35° 15′ N., long. 73° 11′ W. Inquiry ordered 18th October, and held 30th October, before J. C. Tower, Esq., J.P., and J. T. Jenkin, Esq., J.P., with Captains White and Steele as nautical assessors. Vessel unnecessarily and prematurely abandoned. Master's certificate suspended for twelve months, from 31st October.

215. *Albion*, s.s., of Hull, and *Pero*, of Newcastle, in collision 28th September, S.W. Reach, mouth of the Thames. Inquiry ordered 7th October, and held October 29th and three following days at Greenwich, before Daniel Maude, Esq., stipendiary magistrate, with Captain Sceales and Admiral Powell as nautical assessors. Court considered master of *Albion* in default, and suspended his certificate for six months, from 1st November, and acquitted master of *Pero* of all blame.

216. *Mary Stewart*, s.s., of Newcastle, stranded 18th September. Inquiry ordered 14th October. Proceedings pending.

217. *Elizabeth Ann*, of Penzance, stranded in Mount's Bay, October 1st. Inquiry ordered 20th October, and held 4th November, before F. Boase, Esq., J.P., and J. J. A. Boase, Esq., J.P., with Captains Wilson and Grant as nautical assessors. Master in default, in not anchoring in the bay, considering the uncertainty of ship's position, and in neglecting to use lead. Court suspended his certificate for three months.

218. *Lady Proby*, of Dublin, foundered 11th June. Inquiry ordered 20th October. Proceedings pending.

219. *Osborne*, s.s., of Leith, in collision with the *Young Charles*, 27th May, Hook of Holland, North Sea. Inquiry ordered 20th October. Proceedings pending.

220. *Whittington*, s.s., of Newcastle, stranded on Middle Cross, 1st September. Inquiry ordered 23rd October. Proceedings pending.

221. *Wyoming*, of Liverpool, stranded on the N.E. Bar of Sable Island, 15th September. Inquiry ordered 23rd October. Proceedings pending.

222. *Wanderer*, of Whitby, stranded 18th September, on the N.W. side of Bornholm Island. Inquiry ordered 25th October, and held at Whitby, 11th and 12th November, before C. Richardson, Esq., J.P., and A. W. English, Esq., J.P., with Captain Sceales as nautical assessor. Master had gone to bed, exhibiting indifference to ship's safety; mate had run vessel on shore, with the Hammeer Light some time in sight.

Certificate of former suspended for six months, that of latter for three months, from 12th November.

223. *Beulah*, s.s., of N. Shields, foundered 3rd October, off Cape de Gatt Lighthouse, Mediterranean. Inquiry ordered 30th October. Proceedings pending.

224. *Macedon*, of Glasgow, foundered, October 27th, 10 or 12 miles S.E. of Kinnaird's Head. Inquiry ordered 30th October. Proceedings pending.

225. *Singapore*, s.s., of London, stranded 19th July off Cape Guardafui. Inquiry ordered 8th October, and held at Greenwich, 4th November, before J. H. Patteson, Esq., with Captains Forster and Harris as nautical assessors. Loss occasioned by the master's mistake as to the position of vessel, and the act of the engineer in lashing reversing gear. Loss of life occasioned by bad state of davits.

226. *Cotopaxi*, s.s., of Liverpool, stranded on Itaparica island, near Hayti, 25th September. Inquiry ordered 1st November, and subsequently abandoned.

227. *Tickler*, of Liverpool, stranded in Carnarvon harbour, 20th October. Inquiry ordered 3rd November. Proceedings pending.

228. *Hebburn Hall*, s.s., of Newcastle, foundered 5th October, Boldayo Kelp, north coast of Spain. Inquiry ordered 6th November. Proceedings pending.

229. *Scott*, of Sunderland, stranded on the Kentish Knock, 22nd October. Inquiry ordered 7th November. Proceedings pending.

230. *Times*, of Newport, stranded off Mizenhead, Co. Wicklow, 23rd October. Inquiry ordered 8th November. Proceedings pending.

231. *Fannie*, of Southampton, casualty, disabled in the Channel, 1st November. Inquiry ordered 10th November. Proceedings pending.

232. *Nagpore*, of Liverpool, on fire in Kingston Harbour, 10th November. Inquiry ordered 11th November. Proceedings pending.

233. *Cornwall*, s.s., in collision with the barge *Whitewall*, in Thames Haven, 30th October. Inquiry ordered 13th November. Proceedings pending.

234. *Concordia*, of Newcastle, stranded near Cape Anquil, off Newfoundland, 18th June. Inquiry ordered 13th November. Proceedings pending.

235. *Siam*, of Fleetwood, abandoned in lat. 53° S., long. 31° W., 13th January. Inquiry ordered 13th November. Proceedings pending.

Inquiries Abroad.

193. *County of Nairn*, of Glasgow, on fire, August, 1873. Inquiry held at Sourabaya, 23rd August, before A. Haddaway, H.B.M. acting vice-consul as president, with Messrs. N. McVicar, J. Greig, and A. McNab. Court considered that the means of ventilation were insufficient, and found the master had acted rightly in steering the course he did, and finally scuttling the ship.

194. *Daisy*, of Halifax, N.S., stranded off Castle Island lighthouse, Bahamas, 23rd July. Inquiry held at Bahamas, before J. H. Minors, Esq., J.P. Casualty occurred solely through the imperfection of the chart. Master in no way to blame.

195. *Twilight*, of Nassau, N.P., and *Ariel*, s.s., of London, in collision, 27th August, in the Crooked Island passage, Bahamas. Inquiry held at Bahamas, before J. H. Minors, Esq., J.P. *Twilight* had no lights.

196. *Premise*, of Freemantle, West Australia, stranded 1st July, at Port Irwin. Inquiry held at Freemantle, before G. Elliot, sub-collector of Customs, and C. V. Foss, Esq., J.P. Officers exonerated.

197. *Union*, s.s., stranded 16th September, in St. John's harbour, Antigua. Inquiry held at Antigua, September 20th and 22nd. Pilot did not stop the vessel when she was obviously running on the rocks. Master committed an error of judgment in trusting his vessel to him, being an unlicensed pilot.

198. *Formosa*, of New Brunswick, stranded in the mouth of Richibucto Harbour, New Brunswick, 24th August. Inquiry held at Richibucto, before J. Mitchell, Esq., commissioner. Stranding unavoidable. It occurred in a terrific gale, every effort was made to save the vessel, and no fault could be attributed to owners, masters, or officers.

Royal Navy and Royal Naval Reserve.

Abbreviations.—Ad., Admiral; A., Assistant; C., Captain; Cr., Commander; C., Chief; Cl., Clerk; Cn., Chaplain; D., Deputy; E., Engineer; F., Fleets; H., Hospitals; I., Inspector; L., Lieutenant; M., Midshipman; N., Navigating; P., Paymaster; r., Retired; S. L., Sub-Lieutenant; Sn., Surgeon; St., Staff; N. Inst., Naval Instructor; 1st Class A. E., 1st Class Assistant Engineer; 2nd Class A. E., 2nd Class Assistant Engineer; N. Ct., Naval Cadet; Ng. Ct., Navigating Cadet; R. N. R., Royal Naval Reserve.

Promotions.—**Cr.**—Thomas S. Jackson, 1864; Frederick R. Boardman, 1864.

Appointments.—**C.**—Lindesay Brine, 1868, to *Briton;* James W. East, 1871, to *Flora*, for service at Ascension; James E. Erskine, 1868, to *Eclipse;* Henry C. St. John, 1873, to *Sylvia;* George H. Parkin, 1866, to *Victor Emmanuel.* **Cr.**—Herbert F. Crohan, 1873, to *Active*

(additional); Henry St. L. B. Palliser, 1869, to *Lively;* William Howorth, 1867, to *Woodlark;* Charles E. Foot, 1867, to *Daphne;* Robert Woodward, 1870, to *Ganges;* Hector B. Stewart, 1872, to *Dædalus;* Richard Evans, 1872, to *Black Prince;* George W. Hand, 1872, to *Valiant.* **L.**—Frank H. Henderson, 1872, and Henry J. Oldfield, 1872, to *Active* (additional); Edmund S. Pkoë, 1869, to *Caledonia;* Wilmot H. Fawkes, 1867, to *Research;* Thomas de Hoghton, 1868, to *Duke of Wellington;* Charles R. Wood, 1868, to *Penelope* (additional); William E. Darwell, 1863, to *Coquette* (in command); Joshua Cole, 1863, to *Tyrian* (in command); John J. F. Bell, 1866, to *Pembroke;* Francis C. B. B. Simpson, 1873, and John B. Haye, 1865, to *Invincible;* Bouverie F. Clark, 1862, to *Revenge;* Charles D. Eden, 1866, to *Audacious;* Alexander de C. Crawford, 1866, to *Research;* Charles J. Balfour, 1861, to *Devastation;* Walter J. B. Ogilvy, 1863, to *Egmont;* Henry Sandford, 1872, to *Pallas;* Charles H. Warren, 1870, to *Lively;* John W. G. Harrison, 1868, to *Dart;* William Henn, 1870, to *Aboukir;* Philip Francis, 1868, to *Duncan,* for Naval Barracks; Ernest F. Brickdale, 1867, and Francis H. Haygarth, 1868, to *St. Vincent;* Cecil M. Turnor, 1866, Fitzherbert Coddington, 1867, and Augustus P. Whipham, 1869, to *Indus;* Henry P. T. Skinner, 1871, to *Royal Adelaide;* George T. Temple, 1872, to *Hector;* John H. E. Parker, 1867, Emerie J. V. Pritchard, 1871, and Charles Ker-Hope, 1871, to *Malabar;* Henry C. Carré, 1872, to *Caledonia;* Frank A. Harston, 1868, to *Achilles;* William B. Forbes, 1870, to *Audacious;* Edward Hicks, 1865, to *Excellent;* William G. Le Cocq, to *Revenge;* Reginald H. Thornton, 1866, to *Cambridge;* Cecil F. Oldham, 1872, to *Sylvia;* John M. M'Qutrae, 1872, to *Eclipse;* Ronald R. M. Hall, 1872, to *Valiant;* George S. Smith, 1869, to *Active.* **Hon. L. R. N. R.**—Thomas Brooks. **N. L.**—William W. Vine, 1861, to *Briton* transport (in command); Charles Wotton, 1864, to *Indus,* for *London;* Robert Harwood, 1872, to *Zephyr;* George K. Moore, 1867, and George W. Balliston, 1873, to *Dromedary;* Frederic Hire, 1872, to *Zephyr;* John J. Covey, 1864, to *Asia,* for *Victor Emanuel;* Robert Harwood, 1872, to *Fox;* William Pearce, 1868, to *Sylvia.* **S. L.**—Archibald J. Farquarson, to *Bellerophon* (for disposal); Charles W. G. Spring, to *Sultan;* William H. Somerset, Thomas Hadley, William C. Reid, Herbert L. Messum, and Erasmus D. St. A. Ommanney, to *Topaze;* J. Gibbings, and William J. H. Auton, to *Endymion;* George M. Henderson, Bertram A. Muirhead, John L. Eagles, Charles E. Hawker, Douglas A. Wright, Andrew L. Murray, Rowland E. Berkeley, and Frederick G. Rich, to *Lord Warden;* Reginald Y. Smith, to *Lord Warden* (supernumerary); Gordon S. Gunn, and George E. Richards, to *Sylvia.* **N. S. L.**—Henry Baynham, to

Bellerophon; Eland H. H. Mossom, to *Malabar;* William F. Barry, to *Dromedary.* **M.**—Cortland H. Simpson, Arthur G. Gunner, Richard A. Gwynne, Thomas B. Hammond, and Herbert Lyon, to *Charybdis.* **M. R. N. R.**—William H. Thompson, Richard Jones, and Joseph Massey Harvey. **E.**—Thomas Wilmot, 1867, to *Pembroke,* for *Sappho;* Peter Hutchison, 1863, to *Dasher;* Ebenezer Bennett, 1866, Richard Greene, 1867, Joseph Forster, 1869, and William Savage, 1869, to *Malabar;* Thomas Clark, 1865, to *Indus,* for *Defence;* George Thompson, 1863, to *Dromedary;* William H. G. Webb, 1868, to *Indus,* for *Modeste;* John Moysey, 1872, to *Achilles;* John Hobbs, 1870, to *Asia* (additional), for *Enchantress.* **2nd Class A. E.**—Robert Mayston, 1872, and John W. W. Waghorn, 1871, to *Malabar.* **Cn.**—Rev. John Llewellin, B.A., to H.M. Fleet; Rev. Edmund Hitchings, B.A., 1853, to *Audacious;* Rev. Walter L. Tucker, M.A., 1871, to *Charybdis.* **2nd Class St. Sn.**—Henry N. M. Sedgwick, 1869, to *Duke of Wellington,* for *Victory;* Walter Reid, M.D., 1871, to *Active* (additional); Astley Cooper, 1868, to *Devastation;* Samuel Campbell, M.D., 1867, to *Sylvia.* **Sn.**—John H. Pemberthy, M.B., 1868, to *Zephyr;* Edward A. Lucas, 1873, to *Lord Warden* (for disposal); William C. Sandys, 1873, and Alfred M. Kelly, M.B., 1872, to *Iron Duke* (for disposal); Francis J. A. Waring, 1869, to *Boscawen;* Thomas H. Atkinson, 1862, to *Hibernia;* George Robertson, M.D., 1861, to *Excellent;* Robert Atkinson, 1854, to *Dromedary;* James Donovan, 1871, to *Newcastle* (for Yarmouth Hospital). **P.**—Charles H. Stone, 1872, to *Duke of Wellington* (additional), for *Victory;* Edwin Harris, 1860, to *Pallas;* Frederic Lucas, 1854, to *Invincible;* William B. Ramsay, 1872, to *Active* (additional), for transport service; Russell Hill, 1870, to *Cameleon;* Henry W. Andrews, 1870, to *Dromedary;* Henry E. Kitchen, 1864, to *Eclipse.* **A. P.**—Edward N. Richmond, 1872, to *Northumberland;* Henry M. Harrison, 1861, to *Excellent;* George B. Collier, 1869, to *Royal Adelaide.*

Retirements.—**C.**—George J. Malcolm, 1866. **Cr. retired as C.**—Douglas Walker, 1862; Richard S. Bateman, 1865; Noel Osborn, 1867. **Cr.**—John A. F. Luttrell, 1866; John B. Creagh, 1866; Arthur Salwey, 1867; Granville T. Nicolas, 1867; Arthur H. G. Richardson, 1867; Hon. John B. Vivian, 1867; Edward H. Wilkinson, 1867; Alfred Eaton, 1866. **L. retired as Cr.**—Charles Alder, 1863; Cecil S. W. Willis, 1863; Charles Mason, 1863; Thomas H. Larcom, 1863; Frederic J. Easther, 1863; Yelverton O'Keefe, 1864; Frederick W. B. Jones, 1864; Dillon T. J. Macnamara, 1864; Albert T. C. Warrington, 1864; Cecil W. Beaumont, 1864; Robert P. Montray, 1864; George W. Osmond, 1864; Lawrence P. Willan, 1865; William C. J. Blount, 1865; Charles W. Jones, 1865; George O. Moore, 1865;

Francis Hayter, 1865; Augustus H. B. Bradshaw, 1865; James H. Butt, 1865; John P. Bayley, 1866; Frederic Gaskell, 1866; Robert G. Baker, 1866; Reginald C. Townshend, 1866; Charles H. Taylor, 1866; Henry C. Wallis, 1866; St. Vincent Nepean, 1866. **L.**—Charles S. Broome, 1866; Albermarle P. Watson, 1869; John H. Jacob, 1870. **S. L.**—Henry H. Adamson, 1872. **A. P.**—Charles F. Gahan, 1867; Frederick D. Tongue, 1866.

Deaths.—**Ad.**—Sir John Le M. M'Clure, C.B., 1867, *r.*; Edward Sparshott, K.H., 1866, *r.* **Cr.**—Richard G. Jeffreys, 1860, *r.*; Thomas A. Gilson, 1864, *r.*; Albert E. Kay, 1867; Edward Aitchison, 1864, *r.* **St. Cr.**—William F. Baker, 1863, *r.*; John W. Reed, 1868. **L.**—Delvin D. Fremantle, 1864, *r.* **2nd Class St. Sn.**—Robert Dobie, 1814, *r.*

Maritime Law.

Charge of Refusing to Proceed to Sea.—John Wilson, Christopher Johnson, Alexander Glong, Henry Ward, and John Smith were charged before Mr. Raffles, the stipendiary magistrate, with refusing to proceed to sea in the barque *Maraldi*, Captain Scroften, bound for Bahia. The spokesman of the prisoners said that they signed without seeing the vessel, and found "the place they had to live in was something like a pigsty." Another ground of complaint was, that they were sailing without boatswain or carpenter. The captain said they usually sailed without carpenter. As to the absence of a boatswain, he did not turn up. They had on board the usual complement. In reply to Mr. Raffles, River-police-constable No. 11 (Simpson) said it was a very nice little forecastle, with a fire in it. It was big enough for the hands. Mr. Raffles asked the defendants if they would like the vessel to be surveyed; and as they replied in the affirmative he ordered this to be done, remanding the prisoners pending the survey. On the following day, Mr. Bretland, a surveyor to the Board of Trade, said he had surveyed the forecastle, and found that it was sufficiently large for the crew, but it was not certified according to the Board of Trade's instructions. It was badly lighted, badly ventilated, and not well drained. Mr. Raffles said those were great faults, and he could understand why the men refused to go in the vessel. If those defects were remedied, would the prisoners proceed to sea? Wilson said there was also a deficiency of closet accommodation. Mr. Bretland said that was the case. The prisoners, in answer to Mr. Raffles, said they were willing to proceed to sea in the vessel if the requisite alterations to the satisfaction of the Board of Trade were made. They were then discharged. Mr. Raffles said the

captain or owners must pay the expenses of the Board of Trade survey.—Police Court, Liverpool, Oct. 12 and 13.

RUNNING DOWN CASE.—THE "GIRL SLAVE" AND THE "TUSKAR" (s).—A. Bremner, master of the sea-fishing boat the *Girl Slave* (WK. 1773), and R. Mackenzie, fisherman on board that vessel, were accused of culpable homicide. It appeared that the *Girl Slave* had proceeded to sea on the 31st July last, without the prescribed lanterns or lights for exhibiting at the masthead, whilst fishing with drift nets at night; and that Mackenzie, who was on the look-out whilst the vessel was drift fishing without lights on the night of the 31st July, had fallen asleep, and failed to give notice to the *Tuskar*, which approached her. The consequence was that the *Tuskar*, seeing no light, came in contact with the *Girl Slave*, two of whose crew were drowned. The case having been proved, the judge (Lord Ardmillan) summed up. The jury retired, and in a few minutes intimated a unanimous verdict of guilty, but recommending both prisoners to the utmost leniency of the Court. Lord Ardmillan, in passing sentence, said that he sympathized with the prisoners, but the rules of the Board of Trade, in regard to fishing boats, where so many lives are at stake, must be strictly adhered to. Seeing that the accused were men of strict sobriety, he would give effect to the recommendation of the jury, and the sentence would be one month's imprisonment.—Inverness Council Court, September 19.

REFUSING DUTY.—The master of the barque *Miako*, of London, then in Dartmouth harbour, charged six able seamen of that ship with refusing duty. The master stated that, after proceeding to sea, the men requested him to put back, as the vessel was undermanned. He declined to do so, but offered to put into Falmouth. The men then refused to shorten sail, so, as the wind was blowing a gale, he and his officers had to do the work. The men, who had received a month's advance, subsequently returned to work, on his promising to put into the first port, and he did so. The Bench committed them to Exeter gaol for four weeks, with hard labour.—Churston Ferrers Police Court.

UNLICENSED PILOTAGE.—THE BRIG "DOROTHY JOBSON."—The master of the brig *Dorothy Jobson* was summoned, by Henry Edward Andrews, for employing an unlicensed person to pilot his ship after having refused the services of a licensed Trinity pilot. It was urged for complainant, that although the *Dorothy Jobson*, being from the Baltic, was exempt from compulsory pilotage, it was enacted by the 353rd clause of the Act that every master of an exempted vessel who employs, or continues to employ, an unlicensed person to pilot his ship after a duly qualified pilot has offered to take charge, shall be liable to a penalty of double the amount of pilotage, the single pilotage in this case being £3 14s. That complainant was one of the men recently licensed specially for the navi-

gation of exempted vessels, and that there was clear proof of an unlicensed man being in charge of the vessel after defendant had refused to employ the complainant. The complainant Henry Edward Andrews, stated that he was licensed by the Trinity House, in July last, to pilot exempted ships, and that, on the previous Friday, he boarded the *Dorothy Jobson*, and tendered his services to the captain, who declined to employ him, saying that he had his own man further up the river. That whilst complainant was alongside, an unlicensed man, named Joseph Todhunter, went aboard and took charge, giving orders for the navigation of the ship, and that he saw him at the wheel. Defendant strongly asserted that the complainant did not represent himself as being a licensed pilot. Todhunter did not act as pilot, but simply assisted in working the vessel. He (defendant) was in charge all the time, being duly qualified to navigate the vessel. The Bench fined the defendant double pilotage, amounting to £7 8s.—Gravesend Police Court, September 26.

An Undermanned Ship.—Eleven seamen were charged before the stipendiary magistrate with refusing to proceed to sea in the *Greenock*, after having signed articles. It appeared from the evidence of the master, that the vessel, having left Birkenhead, was towed out as far as the Great Ormes Head, when the tow rope broke, owing to stress of weather. Next morning the crew, who had received advances, declined to proceed further in her, in consequence of her making so much water, and the vessel was brought back to Liverpool, and a survey held. The Board of Trade surveyor stated that he had surveyed the *Greenock*, a new vessel, and found her making an inch of water per hour, which subsequently increased to 1·89 inch per hour. He considered the vessel would be seaworthy if large pumps worked by steam were supplied, and additional hands shipped, the vessel being 1,224 tons register, and her crew twenty-three, all told. She should have $2\frac{1}{2}$ men to every 100 tons. In reply to a question from the bench, the men said they would not be willing to go to sea in her, even if other hands were engaged, and extra pumps and a donkey-engine supplied. The magistrate said he thought the best thing the owner could do was to discharge the men and get another crew when everything necessary had been done on board the vessel. He could not deal with the men in the face of the evidence of the Board of Trade surveyor. It would be better for those concerned to come to some arrangement with the men. All he could do at present was to discharge them, and remind them that when everything was done to the vessel that was required they could be brought up again if they still refused to proceed to sea. The men were then discharged.—Liverpool Police Court, October 22.

Detention of Seaman's Clothes for Debt.—A boarding-house keeper for seamen was charged with unlawfully detaining a chest of

clothes and a bag, the property of a seaman. The complainant said that he was in the habit of lodging at the defendant's house when he came on shore, and on the 18th of September his chest and bag were taken to the defendant's house without his authority. He had since applied for them, but was refused them. A person living in the same house as the defendant, said he was present when a man brought the prosecutors effects to the house. On the 22nd September the complainant demanded his clothes, but the defendant refused to give them up until the prosecutor paid him what he owed. The seaman said he would pay when he got the remainder of his money. Mr. Lushington said that the prosecutor appeared to have wanted his clothes without paying for a debt that was due, and dismissed the summons.—Thames Police Court, October 1st.

Desertion.—Edward Hopkins, an ordinary seaman, was charged with desertion, from the ship *Saigon*. He signed articles in London, in September, and on the arrival of the ship, he deserted, and was arrested by a Mercantile Marine constable in Bute Street. Committed for fourteen days, with hard labour.—Cardiff Police Court, 16th October, 1873.

Harbouring a Deserter.—Richard Hall, a boarding-house keeper, was charged with harbouring a deserter named Edward Hopkins, an ordinary seaman, belonging to the *Saigon*. Hall was apprehended on a warrant, and Mr. Ensor, solicitor, prosecuted for the Board of Trade; Mr. Blelloch, solicitor, defended. The case was clearly proved by the Mercantile Marine officers who had traced Hopkins to Hall's house. Three witnesses were called for the defence, but the bench inflicted the full penalty under the Act, viz., £20, and costs 11s. The prisoner was committed to gaol in default, for two months' hard labour.—Cardiff Police Court, 24th October, 1873.

Desertion.—Thomas Bailey, a seaman, was charged with neglecting to proceed in the *Dalkeith*, after having signed articles. It was proved in evidence that a boarding-house keeper from Newport had brought Bailey down, and received his advanced note, after shipping. Bailey at once starting off on the tramp for Swansea, a distance of fifty miles. On presenting himself at the shipping office there, he was arrested on an information from Cardiff, and brought back to this port, and committed for four weeks' hard labour.—Cardiff Police Court, 6th November, 1873.

SHIPPING AND MERCANTILE GAZETTE CORRESPONDENCE.

(Reprinted by special arrangement with Sir WILLIAM MITCHELL.)

DISCHARGING CARGO.—A vessel arrived here from France loaded with pitwood. Eight days were allowed for discharging on charter; the merchant did not arrange for discharging till the seventh day. Can he compel the captain to pay other men to work on board besides his own crew, so as to avoid demurrage? The merchant contends that, however many men he may employ, the captain is compelled to employ sufficient men, at his own expense, to keep them going. The vessel has been discharged in three days, and there are two days' demurrage. Can the captain claim it?—The merchant is entitled to take all the days stipulated for in discharging; but if the ship's crew can give delivery within the time stipulated, all charges for extra labour fall on the person receiving the cargo under the bills of lading, if those documents recite the charter-party. The two days demurrage are due.

INTEREST ON FREIGHT.—A firm in Calcutta chartered a ship to discharge at a port in U.K., and by charter-party the freight is payable "in cash on right delivery of cargo." The charterers re-let a portion of the ship, and all the bills of lading have been made out at a rate per ton delivered, without reference to the charter-party, and several with an additional clause making freight payable as customary, which is 60 days after reporting, or previously, under discount at the rate of 5 per cent. per annum. Are the charterers in Calcutta bound to refund the interest which the owners have had to allow the holders of bills of lading, as their agents here decline to do so?—The hirer of the ship is liable to the shipowner for the 5 per cent. interest at 60 days deducted from the freight. The master was bound to deliver the goods to the bill of lading holder in accordance with the terms of the bills of lading. The master could not legally alter the charter-party, and, therefore, the charterer is not relieved from the fulfilment of its conditions.

DISCHARGING AT TWO OR MORE HATCHES.—I arrived at Waterford with a cargo of wheat from Boston (U.S.), and, according to charter, there were 20 running days allowed for loading and discharging, 15 days of which were expended in loading, leaving five days to discharge. Now, the receivers of cargo want me to discharge the cargo from two or more hatchways at ship's expense, in order to get the cargo discharged within the five days, and avoid the payment of demurrage. I have commenced to discharge with my own crew from one hatchway, filling the cargo in the hold and hoisting it on deck, which is all I can do. Am I bound to go to extra expense in delivering the cargo, because the charterers or their agents have thought fit to keep my vessel a long time in loading, thereby leaving but few days to discharge?—The charterer, having

occupied so much time in loading the ship, is not entitled to make up the lost days at the shipowner's expense at the port of discharge. The increase charges in working the second or third hatch should be borne by the merchant.

Rate of Demurrage.—What is the legal and usual sum per ton register per day that a damaged vessel should demand for detention from the parties liable for her repairs?—The detention of a ship for repairs affords a claim for compensation, and the ordinary rate in such cases is 4d. per register ton per day. In the case of loss of charter or other cause of action or claim, the unliquidated damages would have to be decided by the Court, or by arbitration, in the absence of friendly settlement.

Running into Harbour.—My vessel, whilst on the ground in this harbour, was run into by another vessel from sea direct. My signal light was burning clearly. Am I liable to pay anything towards repairing the damage? I am losing time now, not being ready to take in cargo till repairs are finished. Can I claim demurrage?—If the vessel in harbour was not anchored in an improper position to the danger of ships entering, and contrary to the harbour master's regulations, the owner of the vessel running into her would have to pay the damages, and also demurrage.

Sailing without Bills of Lading.—A captain at a coal port, so soon as his steamer is loaded under a charter-party, takes her to sea without signing any bills of lading. May we enquire what are the nature of penalties he thus renders himself and the owners liable to?—There is no compulsion, by Statute, on shipmasters to sign bills of lading. By the custom of trade, a master should sign bills of lading as they are the only evidences of shipment, and of the right of the shipper to the goods. Bills of lading are required in some ports by the Custom-house authorities to verify the cargo. If, therefore, a master refused to sign bills of lading, the claim for compensation would have to be determined by the actual losses incurred, if any.

Ship's Necessaries.—A dealer states that a captain ordered from him provisions for his crew, and was supplied with same for use during the time vessel was in harbour, and also for the voyage. The captain asked for the account, but had no money to pay for it. He signed the bill, and said if it were sent to the owners the money would be paid per return of post. The account was made out to master and owners. On the vessel arriving home the master, through illness, was compelled to leave, and there is little prospect of his going to sea again. The owner says the master had no right to pledge his credit, and refuses to pay. Who is the dealer to sue?—The master is the person to sue. He ordered the goods, and it rests on him to prove that he had the authority of the owner to do so.

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ERRATUM.

In altering what we believed to be a misprint we have fallen into an error. Mr. Plimsoll's letter to the Solicitors of the owner of the *Parga* was sent while the case was *sub judice*, and as we have stated after the case was settled. — Ed. *Nautical Magazine.*

"The Seas but join the Nations they divide."

THE

NAUTICAL MAGAZINE.

JANUARY, 1873.

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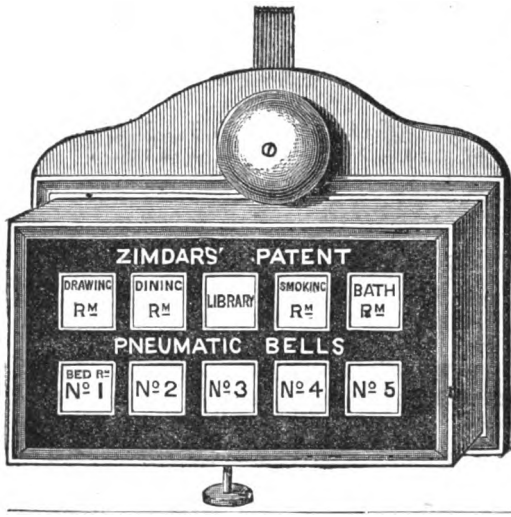

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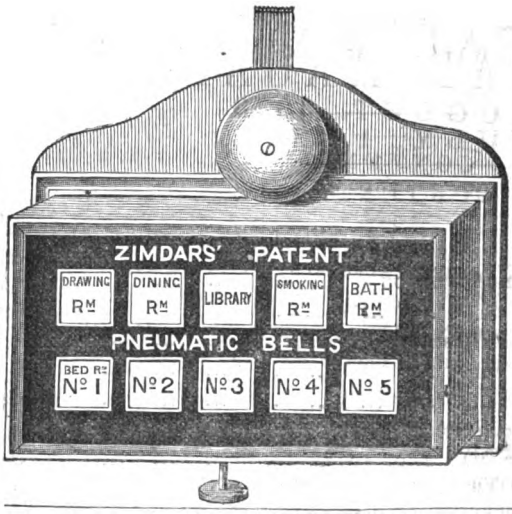

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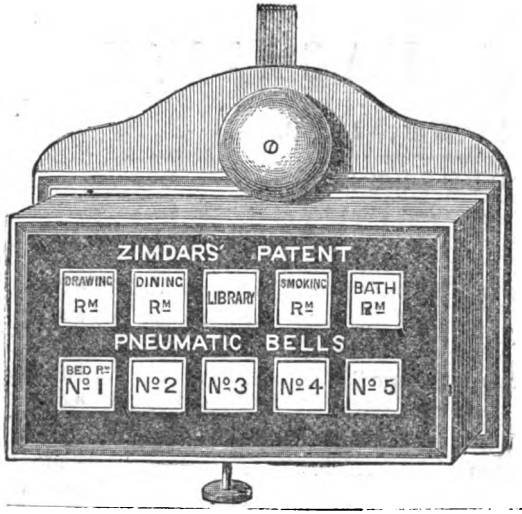

"The Seas but join the Nations they divide."

THE

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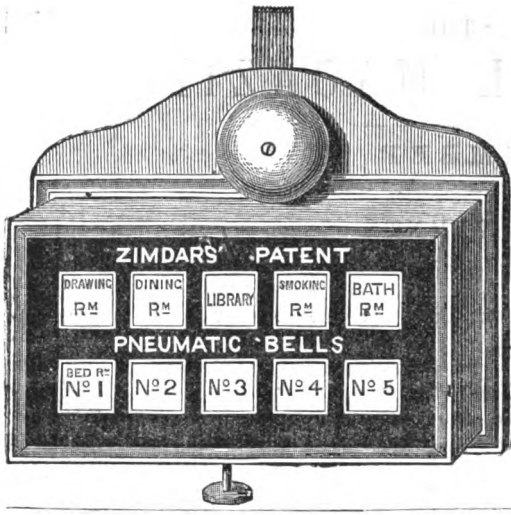

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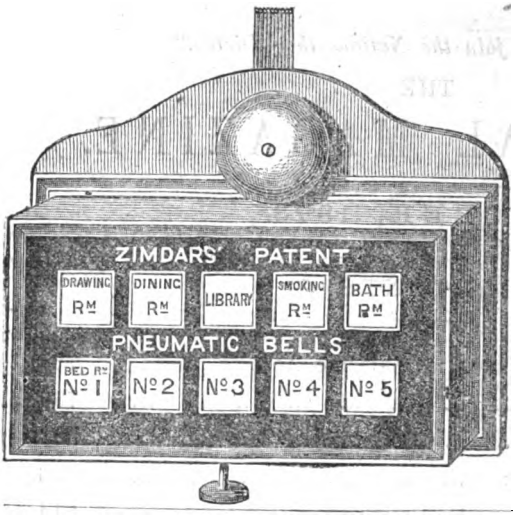

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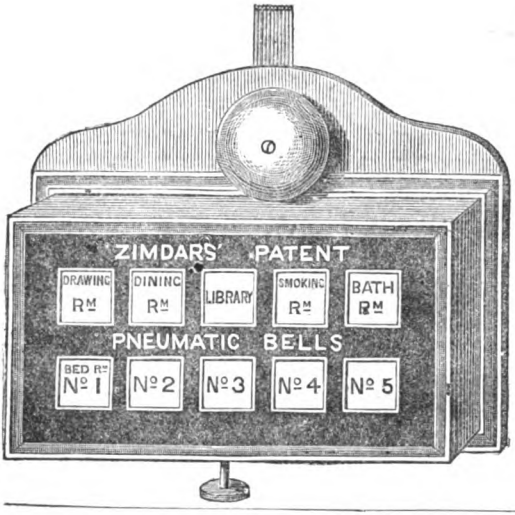

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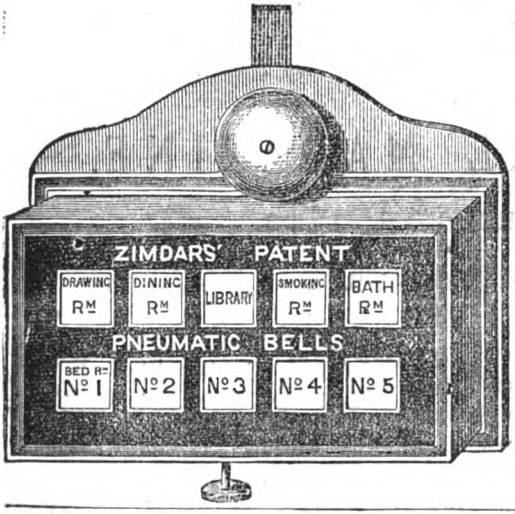

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