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1872.

NEW
SERIES.

No 1,
JANUARY.

NAUTICAL MAGAZINE

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NAUTICAL MAGAZINE,
1872.

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FOR 1872.

NEW SERIES.

A JOURNAL OF PAPERS

ON SUBJECTS CONNECTED WITH

MARITIME AFFAIRS.

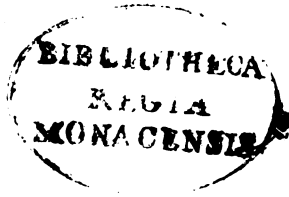
"THE SEAS BUT JOIN THE NATIONS THEY DIVIDE."

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THE
NAUTICAL MAGAZINE.

NEW SERIES.

JANUARY, 1872.

EDITORIAL NOTICE.

THE New Series of the *Nautical Magazine* which began with 1871, has been on the whole reasonably successful, and among maritime men it has undoubtedly had a very encouraging reception.

It is proposed to carry on the New Series under what it is hoped will prove to be still more favourable auspices.

For the future the Magazine will be under the joint editorship of a gentleman of acknowledged position in the Civil Service and well known in shipping and mercantile circles,—and of the Editor who has conducted it during the past year.

Associated with the Editors will be a number of competent and well-known writers on Navigation, Meteorology, and Astronomy; on Steam, on the deviation of the Compass, and on other matters of interest to the Royal Navy and the Mercantile Marine; and it is confidently hoped that the reputation which the Magazine has already attained for papers on scientific subjects, will thus be well maintained.

Our leading articles will, whenever practicable, be published with the names of the writers, and the articles themselves will appear fresh from the pens of the authors, without suffering any material alteration at the hands of the Editors.

At the same time it is hoped that our numerous correspondents in various parts of the world will continue to send us communications* on nautical matters; and such communications will always be published if warranted by the importance of the subject.

With the view of making the *Nautical Magazine* still more useful than hitherto as a hand-book and book of reference for persons connected with maritime affairs, it is intended to publish in each number—in addition to the particulars concerning new lights, rocks, and shoals, and other hydrographic information which has hitherto appeared in our columns,—a digest of the chief maritime law cases decided in the preceding month; the substance of official enquiries into cases of wrecks, etc., and of official orders and circulars; promotions in the Royal Navy, the Royal Naval Reserve, and amongst the Board of Trade and Customs officers at the outports; and such other information as may have an interest for professional men. Whilst however we endeavour to make our Magazine a book of reference for Naval and Consular officers, and officials connected with nautical affairs in all parts of the world; for owners, masters and officers, underwriters, agents and sailors, and others immediately concerned with our great mercantile marine,—we shall always find space for the discussion of such general personal and professional matters as will gratify our readers, taking especial care to avoid anything in the shape of personal grievances or party feelings.

We shall not omit to find space for such light literature as will help to relieve the tedium of long voyages, and in our next number will be commenced a serial story, written expressly for the *Nautical Magazine*, by Mr. W. Cosmo Monkhouse. We shall also present our readers from month to month with one of those pleasing productions sometimes in prose sometimes in verse, with which Mr. Austin Dobson delights the English reader.

We look with hope for the assistance of the nautical community to render the Magazine at once characteristic and representative, feeling that genuine efforts on our parts will be rewarded by genuine and substantial appreciation by those for whom we cater.

* Communications should be addressed to the Editors, *Nautical Magazine*, 1, Vincent Square, Westminster, S.W.

RETROSPECT OF 1871.

A BRIEF review of the principal events as regards maritime matters during the past year, will not be out of place in this first number of our journal for 1872.

The year 1871 opened under very inauspicious circumstances. The deadly struggle was raging between two great powers on the continent, and the other nations of the world stood as it were aghast, watching the terrible conflict with eager anxiety. In England the depressing effects of the dreadful calamity of the loss of the *Captain* were still operating on the public mind; the loss of the *Psyche*, the vessel employed on the Eclipse Observation Expedition, by striking on a rock near Catania, had aggravated the popular feeling of distrust, and the latent fear finding expression, the cry was heard on all sides that we were not prepared to hold our own either by land or sea in the event of our going to war.

The events that have occurred in connection with the Navy have not been so startling and important as was imagined they would be at the close of 1870.

This last year may be said to have been more occupied in developing the schemes marked out, both with regard to the *materiel* as well as the *personnel* of the Navy, than with any direct plans or resolves. The *materiel* of the Navy has progressed more with regard to coast defence than of sea-going ships, we have had the *Glatton* added to our strength, although as far as we yet know, this powerful nondescript will only be of use for the purpose alluded to, and even doubtful in her capabilities of moving from port to port excepting under favourable circumstances. That such ships were necessary is beyond doubt, and one or two stationed at each large port will render more real service in defence than the stationary forts; but it is much to be regretted that more gunboats of the *Staunch* class have not been built, for we are persuaded they would be found most powerful auxiliaries, and would be more dreaded by an attacking force than the larger and heavier vessels.

The illness of Mr. Childers in the early part of the year was a most unfortunate circumstance, he having commenced a reform of a sudden and almost revolutionary nature, both in the administrative and personal departments of the Navy, which he was unable to carry out, being compelled by continued ill-health to resign his post before they were completed. The changes made in the preceding year were of too radical a nature, and too sudden; but Mr.

Childers, ignoring the opinion of a great statesman in favour of "general improvement, no violent changes," had no sooner assumed the reins of office, than he experienced in his own person the ill effects of haste in taking the whole responsibility of the Admiralty on his own shoulders, which responsibility the subsequent loss of the *Captain* caused him to ignore at once. We may also point to the disorganized state of some of our departments, to prove the unwisdom of the sudden dismissal of officers of experience, and the penny-wise and pound-foolish proceeding has even yet to be felt in its entirety. The scheme of Naval retirement, also inaugurated by Mr. Childers, although a step in the right direction, and done with a good intention, has proved no more successful than his administrative acts, and although some of the lists of officers are reduced to the standard figure, promotion has come to a standstill, and the prospect of the junior officers is deplorable in the extreme. Mr. Goschen, the present First Lord, has a task before him this year that may well create great anxiety, but we believe he is steadily purposed to do his best, and if not too much led by one-sided professional advisers, will doubtless effect much good; it is however but fair to suppose, that had Mr. Childers continued at the Board, and thus had the opportunity of completing his arrangements, much permanent good would have been effected.

Of our dock-yard economy much cannot be said; the ultra economy—as is the case with all ultra economies—has proved anything but economy, the combining in one and the same person the master shipwright, chief engineer, and storekeeper, has failed most lamentably, breaking down the man, while the duty was inefficiently performed; it has consequently been abandoned. The same may be said of master's attendants of victualling yards, who were removed contrary to the advice of some of our best officers, and will doubtless have to be replaced, though it may be under another name.

The courts martial on the ship's stewards for peculation was another evidence of a want of administrative arrangements in providing a sufficient check to prevent such a thing being possible; indeed the pursorial duties of the paymasters have been so changed that their responsibility did not extend to one important article of consumption in a man-of-war.

The Committee on designs for ships of war appointed in consequence of the loss of the *Captain* has completed its labours, and if our future ships of war are not all they should be, it will not be for want of scientific investigation and experiment in regard to form for stability.

No more notable instance of gross mismanagement in naval affairs has happened during the year than the dispatching the *Megara* to the Antipodes overladen and unserviceable; the bad name she previously bore for unsoundness and consequent unseaworthiness has been sufficiently proved to be true, and that coupled with all the remonstrances that both in Parliament and out perfectly rained on the officials, made it doubly reprehensible that no further examination was instituted to ascertain the truth of the assertion on one side or the other. The officers and crew have been entirely exonerated of all blame by a court-martial, and if the Royal Commission at present sitting does not bring to light on whom the responsibility rests there will be a great miscarriage of justice.

The stranding of the *Agin-court* on the Pearl Rock in broad day, was a culpable accident that has been of some use in exhibiting some of our weak points, fortunately without having to pay too dearly for our experience. It has proved the undesirableness of divided responsibility in navigating our ships, and has stimulated an enquiry into the *modus operandi* by which these matters are governed, which has been shewn to be unsatisfactory in the extreme. It has also opened up the question as to how and by whom our increasingly costly fleet is to be navigated and piloted, whether by abolishing the class of officers hitherto retained for that special service, and entrusting the duties to the general officers of the executive, or by raising the present class of navigating officers to a position commensurate with the importance of their duties, and making them (under their commanding officer) personally responsible. We believe some action has been taken and we hope it will bear fruit in this present year, and thus set at rest for ever a question that has caused much jealousy and ill feeling.

The subject of the higher education of the officers of the navy has been well ventilated during the year, and has greatly added to the information obtained by the Royal Commission the preceding year, so that in the creation of any college or university for the purpose, the principles on which it should be established have been well ascertained.

Greenwich hospital has been a theme of comment as to its future use, and equivocal hints have been given that it will be devoted to a naval purpose, but nothing definite has yet transpired, although we believe we are right in saying that its destiny will be for educational purposes. A wise decision has been come to in adding 200 boys to the school. Connected with this subject is that of manning the navy, the difficulty being an increasing one, the Naval

Reserve not having had the effect intended, it is pretty generally admitted that we shall in the future be mainly dependent on boys to be reared and educated for the purpose.

The Flying Squadron has been perpetuated and under better auspices than formerly. In addition to its useful political effect on foreign countries visited, it is essentially a good school for our seamen, if indeed the system of disgusting them with incessant drill is not persevered in: Jack does not shrink from work as long as he sees utility in it, but the treadmill of incessantly repeating the same drill after perfectness is attained is disheartening, and probably accounts for the numerous desertions that took place in the first Flying Squadron.

Among the novelties of the year is the birth of the "Woolwich Infant," which has been tested and found wanting, but the practical knowledge gained by the creation of this enormous piece of ordnance is well worth the large sum expended on it; and although the crack in the steel lining has not entirely rendered the gun *hors de combat*, it is a grave consideration what effect it will have on its future use and for which purpose it has been decided to continue to fire from it before re-lining it. This accident to the 35-ton gun and the bursting of one of the Krupp steel guns at Kronstadt has caused some anxiety to be felt on the subject of steel, and partially steel ordnance.

As regards the Mercantile Marine, things have not been so unsatisfactory. Although merchant shipping legislation has been dangled before the eyes of the public and withdrawn again as soon as hope was excited in regard to it, owing to the pressure of more important matters, yet there is much cause for congratulation at the general progress and present condition of our mercantile navy, The war certainly closed a great many ports, and operated prejudicially against trade generally; but on the conclusion of peace-business again grew brisk, and the thriving ports of North Germany, closed during the war, again became busy marts; the French people with crippled energies addressed themselves to the task of regaining their departed commerce, and the merchant vessels of all nations again sailed into the ports of the late belligerents without fear of infringing the international laws respecting blockade or contraband of war. The reaction soon made itself felt in England; in the shape of increased exports, and increased tonnage for carrying produce of other countries; large demands from the two bleeding combatants created a brisk supply from our own and other countries.

Moreover, as regards the general progress of our commercial

enterprise, we have no cause whatever to be dissatisfied. Which ever quarter of the globe we turn our attention to there we find British commerce extending itself; pushing up into remote and uncivilized regions, finding new markets for our exports and new products for importation. By the enterprise of our navigators great rivers are now made to bring down from the interior of rich but hitherto undeveloped lands, the valuable produce of those regions. The Suez Canal, the Panama and Pacific railways, the Indian and Australian railways, the submarine telegraph cables, and all the rest of the host of the great and successful works which especially mark these times of progress, add their facilities to intercommunication; and British ships laden with merchandize, British men-of-war, the police of the world's highway, British courage and British influences are to be met with all over the world, in stronger force than ever.

The official returns for the eleven months ended November last shew an increase in the tonnage of British vessels engaged in foreign trade of more than a million tons, and of upwards of half a million in the general coasting trade, over the similar periods of 1869 and 1870. The value of the imports for the same period exceeded that of the two previous periods by between forty and fifty million pounds sterling, and the value of the exports of British and Irish produce shews an increase of upwards of thirty millions. These very encouraging facts shew us that British energy and enterprise are as vigorous as ever; and we would remark that this success may fairly be attributed to that energy and enterprise, and not in any special manner to the successful administration of the Government of the country; for although not exercising any restrictive influence on the progress of our mercantile marine, the Government has done little or nothing* to encourage or to afford special facilities for commercial enterprise, and have year by year shirked the task of remedying many defects in the Merchant Shipping Laws which cry aloud for redress. We certainly have to express our regret that the huge Bill brought forward so ostentatiously early in the Session, a bill full of promise for the remedy of the many anomalies in our mercantile marine, should have been pushed out to make room for one hardly knows what. But still the mountain did not labour altogether in vain. True it is that anxious eyes were on the look out, and expected some prodigious legislative result from the bulky Merchant Shipping Code Bill, with

* If we except the settlement of the *Alabama* claims, about which, now the question is settled, the less said perhaps the better.

its six hundred and ninety-six clauses, but after all, the effort brought forth only a mouse; a very small piece of legislation, principally with reference to the seaworthiness of merchant ships, was carried through in deference to the public wish that some check should be placed on the proceedings of negligent or unprincipled owners. To knowingly or negligently send a ship to sea in an unseaworthy condition, so as to endanger life, is made a misdemeanour; and seamen have it in their power to call attention to unseaworthiness before they commence a voyage, and sundry provisions are made for the protection of owners against false accusations. The concession is small, but good so far as it goes. The subject of pilotage has been very much agitated during the past year. A Bill was brought into the House of Commons for the abolition of compulsory pilotage, and it was understood that the Government would make a genuine effort to pass it. But ministers were overwhelmed, some show of fight was made in regard to the Bill, and with as little fuss as possible they silently shirked the struggle and shelved the Bill. In the early part of the year the Trinity House shewed some disposition to throw open to some extent the monopoly of licensed pilotage in the Thames, by licensing any one who could prove his qualifications to pilot vessels between London and Gravesend. After considerable discussion the proposal took definite shape, and notice was published of the intention to make a Bye-Law to that effect, but no further action appears to have as yet been taken in respect of the proposed new arrangement. The incidence of light duties has been modified in such a manner as to bear with less hardship in particular cases, and to generally relieve the shipowner. We learn that the estimated reduction of income would amount to £50,000 per annum, to which extent the shipowner is relieved. Increased trade however will probably lessen this loss to the exchequer, and will, it is hoped, in time enable the Government to make still further reductions. The lighthouse system of our coasts maintains its efficiency. During the year one new lighthouse (Souter Point) has been established in England, and several are in course of construction in Scotland and Ireland. The electric light is slowly gaining ground in England. The difficulties attending its management are gradually vanishing before experience, and improvements in the apparatus. It shines out now from three lighthouses, Dungeness, South Foreland, and Souter Point, and its application will no doubt be further extended as opportunities offer. We are informed that there are numerous projects afloat for utilising this most brilliant light for other purposes connected with navigation, such as ships' side and anchor lights, etc. Efforts have

been and are being made to discover some reliable and effectual method of signalling in fog, but the results as yet have not been of any especial significance. The life-boat services of the year have been marked by great personal courage, and hundreds of lives have been saved through their instrumentality. The sympathy and liberality of the public have enabled the Institution to place many new life-boats in localities where their use will be undoubted. The energy and vitality of the Royal National Life-boat Institution, together with the admirable organisation of their labours, have conduced in no small degree to the success of their humane efforts. The life-saving apparatus under the management of the Board of Trade, has also been established in many places, and used with much success. We may certainly assume that a marked progress has been made during the past year in all that relates to the safety of navigation near our own shores.

In other countries, we notice that Germany has been making extraordinary efforts to obtain some sort of status as a maritime power. The war demonstrated her weakness in this respect, and since the conclusion of peace all her energies seem to have been bent on developing the resources of her limited seaboard, of building new ships both for war and commerce, and of extending her trade in all parts of the world. The Americans are also giving their serious attention to maritime matters, and are bent on developing their enormous resources. The Russians, Turks, Austrians, Italians, Danes, and Dutchmen, are pushing onward. The Japanese have made some remarkable advances. France shews signs of recovery from the crushing blow she received, but as yet we are unable to chronicle any progress. Spain seems to have lost the spirit which animated her early navigators, she remains passive on the sea. Norway and Sweden have not developed their marine to any greater extent, they continue to hold about the same position as hitherto.

We have to notice the results of the Eclipse observations; they have thrown much light on the constitution of the Sun's body, and added much to scientific knowledge. Dr. Carpenter's researches on the subject of oceanic circulation have created much interest and discussion during the past year, and the subject will no doubt attract considerable attention in the ensuing year, as Dr. Carpenter has brought forward some strong additional evidence in favour of his theory. The Arctic regions have again been explored, and a German expedition has discovered open water in latitude 79° between Spitzbergen and Nova Zembla. Sundry other expeditions have proceeded to those regions, but none from England. The develop-

ment of the torpedo as an offensive weapon in naval warfare is also one of the particular results of the past year.

In surveying the events of the year now past, as regards our own maritime matters, two points stand out with marked distinctness. One is that as far as our war navy is concerned things have not by any means gone well with it; the other, with reference to our merchant fleet, is that generally speaking all has gone well with it. We are unable to conceal from ourselves that our position as the great naval power of the world is not fixed on so secure a foundation as before this disastrous year. The record of our naval transactions for 1871 tells of real and terrible disasters; of constant official enquiries and courts-martial; of internal administrative dissensions; of costly experiments which generally have led to nothing; of mistakes and mismanagement in high places; and of ominous mutterings of dissatisfaction in the service.

One great hobby has been inscrupulously ridden to the detriment of everything and everybody connected with the Naval Service—"Cut down the expenses" has been the guiding influence, and the Government in vainly grasping at this will-o'-the-wisp Economy, have been losing hold of the real substance of our naval power. It is false economy if such disasters as have recently been experienced are in a measure brought upon us by the save-all and makeshift principle. If men are discontented servants, if they doubt the good intentions of those who rule them, if they are sent in rotten ships on long voyages; how much confidence will they have in the governing powers? And will their service be hearty and enthusiastic? This wretched shriek about economy and retrenchment has been the curse of the year as regards our navy. We disapprove of it altogether. Because some niggardly taxpayers grudge the small percentage on their incomes, is our chief protection to be weakened, and our pride and boast to become our shame? Not so. We at least will utter our protest against it, and we doubt not that the sympathy of most men will be with us. We are glad that the errors of naval administration have been well commented on. Truth is a healing balm, and when hidden defects are brought to light and boldly examined, the first step is taken towards remedying them. Therefore we hopefully enter upon this new year, trusting that the good sense of our administrators will influence them to desist from pursuing mere theoretical ideas of perfection, and to address themselves to the great practical work of making the defensive element of our maritime power thoroughly effective both as regards our war ships and those who man them. It is the desire of all true Englishmen that we should maintain our naval

position, not for the mere sake of name and fame, but in order that England may be able to disseminate the arts of civilization in remote parts of the world; to protect the oppressed, to punish lawlessness and violence, and, in the performance of these high functions, to extend her trade and increase her prosperity more and more to the benefit of her own children.

STEAM SHIP BUILDING IN 1871.

THE leading journal has set people thinking by an article some short time since, on the subject of the great additions lately made and still being made to our fleet of merchant steamers. The article to which we refer conveys the impression that in the mind of the writer we are building too fast, and are in consequence likely to bring about a serious financial crisis.

The subject is one which may well demand attention and discussion in the columns of the *Nautical Magazine*.

The owners for whom the large fleet of steamers is now being built, may be divided into two classes, viz., (1) Those who understand their business; and (2) those who do not. If the latter class were the more numerous, or if the majority of steamers under construction at the present time were being built for that class of owners, then indeed we should be right (seeing how great is the number of steamers on the stocks) if we were to conclude at once that we are building recklessly, and that the consequences must be disastrous. In any case such a gloomy conclusion may possibly be sound, we do not say that it is not; but we think that many facts must be taken into consideration and weighed carefully before such a conclusion is warranted.

Early in the Session we shall no doubt be in possession of returns that will give us exact figures, but we need not wait for those exact figures in order to lay before our readers some considerations which may, we trust, tend temporarily to modify if not to allay the alarm felt in many quarters.

In the first place we must bear in mind that as the number of sailing ships built or building has fallen off very greatly, it would indeed be a discouraging symptom if the number of steamers did not proportionately increase. Most of our readers will recollect how great was the number of wooden ships (sailing ships) turned

out annually on the Wear, the Tyne, and the Tay. There is now scarcely a wooden ship building on either river. This being so, it is satisfactory to find that ships of some other description are being constructed at these places. To meet the *bona fide* requirements of trade it is absolutely necessary to keep up, let alone the necessity for increasing, the tonnage of the Empire. That the new ships are iron ships and steamers, in lieu of wooden ships and sailing, is the inevitable result of the keen competition now going on with foreigners: of the strides made by our constructors and engineers in the simplification and multiplication of appliances for building iron ships, and in the economy of the steam engine: and of the opening of the Suez Canal. After the great discovery of the compound engine, and its successful introduction by the late John Elder, and after the successful opening of the Canal, we cannot expect to see sailing vessels of any size constructed in large numbers as heretofore. The case of the Wear serves as an illustration of the extent to which the abandonment of the construction of sailing (wooden) ships is carried. The transformation is so great that instead of the wooden fleet annually under construction on that river there were when we visited it, but a short time since, certainly not half a dozen wooden ships building; but there were between sixty and seventy iron ships (steamers) on the stocks and afloat, in various stages of construction. But it may be said these new steamers are more than sufficient to replace the old ships worn out, wrecked, and otherwise destroyed. We admit it. There can be no question of it, but although this is so, the fact is not in itself any argument, certainly not any conclusive argument, in favour of the allegation that we are over-building. We know that traffic begets traffic. A line of communication being once established may be carried on by one ship at first, but that ship soon becomes too small or too slow to meet the business it has created, and other faster and larger ships must supply its place—and so the stream of healthy trade once opened goes on, whether it be in the number of warehouses or of waggons, railway cars, omnibuses, or ships; increased means of production and increased means of transport, speed, increased accommodation, increased trade, act and react on each other. There is nothing new in all this. If one fact is established beyond a doubt, it is this mutual action and reaction, and yet no sooner do we see practically a verification of it, than people ask "can there be employment for the ships we are building?"

The steam trade with the United States and our North American possessions for instance, began with one ship, and was maintained somewhat precariously by three or four. It is not very long since

that passengers and goods were conveyed across the Atlantic in sailing ships. Then came the steamers, slowly at first, but always in an increasing arithmetical proportion, so that now in addition to the original (Cunard) line of steamers to America, we have the lines of beautiful ships of Messrs. Inman, Messrs. R. Guion, the National Company, the Messrs. Allan's, Messrs. Handyside and Henderson, and lastly, the White Star line. The tonnage of Atlantic ships is now drawing towards 4000 tons, and their length verging towards and sometimes exceeding 400 feet.

Those of our readers who have seen the discharging and loading of a transatlantic steamer, the discharge of 2000 tons, and the shipment in their place of other 2000 tons of cargo in one ship in less than a week, who bear in mind, that this discharging and reloading is for ever going on, not in one ship but in many, and that cargo is always to be found in such abundance that additional steamers are required to meet increased demands, those of our readers who have seen and know these things, must smile when they hear talk of over-building for these trades.

Besides the healthy development of the North American trades we have old companies—the Peninsular and Oriental, the Royal (West India) Mail Company, and other companies (not to mention those companies whose ships make short voyages); and we have (Mr. Just's) Pacific company, probably the largest steam monopoly afloat, the two African companies, Messrs. Lamport and Holt's line, Mr. Alfred Holt's line, Messrs. Bibby's line, besides steam ships and lines belonging to other well-known firms, such as Messrs. Norwood's, Green's, Wigram's, and many others, all doing increased healthy trade, all with ships increasing in size, numbers, and speed, and all at the same time whilst carrying on trade, creating trade, to be done by further increase of steamers of their own lines, or affording a ready means for the employment of the capital of new adventurers. It will doubtless not be long before we see steamers carrying such goods as sugar and molasses, at sailing ships' rates. If this comes to pass it must be done by an increase in the number of steam ships of the present companies, or by ships laid on by other owners on purpose, but that it will be done is morally certain; such is the economy of our modern steam engine. What is probable in the case of the sugar trade is probable in many other trades, in which steamers must partially supersede sailing ships. We trust that we have shewn that the absolute necessity that exists for additional steamers to meet the *bona fide* requirements of increased trade is in itself a circumstance that should lead us to pause before we accept as true the allegation—that we are over-building.

But there is yet another circumstance that we must not omit to notice, viz., our position as competitors with foreigners: we cannot afford to be left behind in the race. Foreigners can afford to build iron ships largely in this country, and can and do work them at a profit too, and in some instances are very keen competitors. If they can afford to do this why cannot we also?

We must now leave the subject for the present. It would be unwise to say too much, until authentic figures are published: but we may indicate, that if any apprehension is to be entertained at all just now, it is not that too many steam ships are really being built, but that the owners of sailing ships will be speedily ruined. Our experience of shipowners does not however even lead us to this conclusion. It is true that according to some accounts the shipowner has been ruined over and over again during the last twenty-five years, by the repeal of Navigation Laws, and the removal of restrictions, and other, so called, at the time, bad legislation; but it is also an undeniable fact that he still exists and can afford to build expensive ships even now. A shipowner knows just as well when to "*Go into steam,*" as he knows any other part of his business, and he also knows that, notwithstanding the increase of steamers, there are and will for a long time be many cargoes on which he can earn a handsome profit; cargoes better suited to sailing ships than to steam ships, and which to the advantage of all parties concerned can under certain circumstances be conveyed in the slower and less expensive sailing ship.

A METHOD OF COMPUTING THE HEIGHT OF MOUNTAINS,

FROM OBSERVATIONS OF THE BAROMETER OR THE BOILING POINT
OF WATER.

By STAFF COMMANDER C. GEORGE, R.N.

RULE—1st. Place the readings of the Barometer under each other, the Barometer at the lower Δ uppermost: take their sum, half sum, and difference, and call the two last quantities A and B.

2nd. Take the sum and half sum of the detached thermometers and call the half sum C—; take out the log of C from table C, and under it place the log of B, and then the arith. comp. of the log of A—, add these three logarithms together, and it gives the logarithm of the difference of level in feet.

THE FUTURE OF THE SUEZ CANAL.

The Suez Canal is undoubtedly the greatest engineering work of the present Century. It has lessened the distance to India and China by 5,135 geographical miles, and the duration of the passage by thirty-six days. It would be a crime to suffer it to fall into disrepair. It would be one of the greatest blots on civilization to allow it to go to decay. Its utility, its necessity, is however so fully established that there is but little fear that the greater calamity will happen. That the Canal may fall into disrepair unless some energetic steps are taken is not however so uncertain. The management is perhaps not all that could be wished, and the financial aspects are, it is to be feared, and to say the least, gloomy.

The *Times* in an article in its pages of the 20th December, 1871, calls attention to the subject generally, and says :

“It is again reported that M. de Lesseps is engaged on a scheme for procuring the purchase of the Suez Canal by foreign Powers. To what extent such a scheme may have passed beyond the stage of speculation in the mind of its author we are not able to determine; but there is little doubt that we shall often hear of it, for it is sure to occur again and again to those personally interested in the enterprise.” * * *

“We can well imagine such an ultimate transfer of the Canal to have been present from the first to the minds of its promoters. Indeed, there can be little doubt about it, for the argument has always been that, when once made, Europe must perforce maintain the undertaking.” * * *

“It will be well for the Suez Canal promoters, or any others, to understand once for all that England will not be easily brought to take upon herself responsibilities, pecuniary and political, through fear of other Powers acquiring further influence in the east.” * * *

“England has long had a settled policy with respect to Egypt. We should never allow any European State to possess the country, or to assume in it an influence detrimental to our interests, the chief of which is the right of transit. Any schemes in this direction would be opposed by all the strength we possess. But, on the other hand, nothing would be more distasteful to the nation than to acquire new responsibilities in a distant country. What the English nation desires is simply that the Suez Canal Company should go on and prosper, maintain its works in order, limit itself to business matters, and keep steadfastly aloof from politics. For anything else the time has not yet, and perhaps will never, come.”

With the views of the leading journal we agree to a great extent, but we do not agree entirely. We concur in thinking that “we shall often hear of it” (the Canal). Our knowledge of the shipping interest we think even warrants us in saying that we shall not only often “hear of it,” but that it will be pressed on the

serious attention of H.M. Government by persons and interests whose representations cannot be, or at all events are not likely to be disregarded.

Four things are certain—

1. That when the Canal was opened it was by no means complete.
2. That from a financial point of view it is not successful.
3. That some decided steps must be taken to raise funds perhaps for completion, certainly for maintenance; and, as necessary to this,—
4. That decided steps must be taken to strengthen the management.

The leading journal says, that “what the English nation desires is simply that the Suez Canal Company should go on and prosper, maintain its works in order, limit itself to business matters, and keep steadily aloof from politics.”

It is all very well for the English nation to be blessed with this simple desire, and to express it; but it is not very much to the purpose; for what is to happen if the Suez Canal Company like many other joint stock companies, cannot for want of funds maintain its works in order, and consequently fails “to go on and prosper.”

We see no remedy for the present state of things and but little hope for the future, except in united action on the part of the Governments of those maritime countries and states whose ships use the Canal. We believe the Shareholders and the Company are unable to help themselves effectually in the present condition of affairs, unless extraordinary assistance is vouchsafed to them: and we believe that this assistance to be effectual must be not only interference, but control by European States.

We do not for a moment suppose that any European power would tolerate the assumption by any other power of exclusive ownership in the Suez Canal. The Canal is one of the highways of nations; and it is only by maintaining this as a principle that it can exist, and that a satisfactory solution of the present difficulties can be found.

Whatever may hereafter happen, two things are certainly probable: first, that before more money is invested in the Canal by capitalists in this country, a searching investigation into its condition (financial and structural), will be demanded; and secondly, that H.M. Government will not under any circumstances that are likely to present themselves, we had almost said under any circumstances whatever, so interfere in the matter as to cause any uneasiness in the political world, but if H.M. Government in concert

with other Governments should be able to devise a scheme whereby the Governments of the States whose ships use the Canal, can by their representatives on the spot, take joint control of the work and management, the difficulty will be overcome. The writer of an able article in the *Quarterly Review* on "Industrial Monopolies," expresses ideas of very much value as regards the question we are now considering. He says:

"No one can doubt that there is a large and constantly increasing class of industrial undertakings which are of the utmost value to the public, and which return ample profit to the capital and industry bestowed on them, but which yet are not and cannot be regulated by competition. It is a matter of some speculative interest to ascertain what these undertakings are, and what are the characteristics which they possess in common, so that we may be able to recognize and define them. It is a matter of much more serious and practical interest to ascertain what is the best way in which they may be managed and regulated so as to obtain the greatest possible advantage from them." * * *

"There is one case in which the principle of placing harbours in the hands of a public trust has been recently applied in a very remarkable way, and with great success, viz., the improvement of the important navigation of the Danube. This has been entrusted to an International Commission representing the different maritime nations interested in the trade of the Danube, and it has carried on its work so efficiently as to develop an enormous traffic. There is the greater reason for mentioning this case at the present moment, since it affords a precedent for endeavouring to deal in a similar way with the still more important case of the Suez Canal, which is now in a very bad financial condition, and which, if it remains in the hands of a private company, is likely to suffer hereafter from all the evils of monopoly, aggravated by international jealousy."

We accept the proposal of the able writer in the *Quarterly Review* as one likely to find favour with the shipping interest, and as suggesting the best, if not the only remedy for the present state of things;—and we trust that no time will be lost in giving practical effect to it.

IN "THE HIGHWAY."

FOR more years than we wot of Ratcliff Highway has occupied a dreadfully prominent position in the regard of the enterprising country cousin who periodically visits the metropolis for the purpose of "seeing life." We have met with aspiring young persons whose demeanour at home in the provinces, is doubtless of the

meekest, who spoke with distressing glibness of that amazing place of entertainment known to the unwise men of the East as "Tiger Bay." Others we have known who had witnessed scenes in "the Highway" calculated to make the hair of a stay-at-home citizen behave like the quills of William Shakspeare's porcupine. Others again who had not yet traversed the Broadway or Regent Street of "Poor Jack" (popularly regarded as such), but who meant to do so on the very earliest opportunity. As a rule the traveller who has not made himself personally acquainted with the more or less thoroughfare in question, knows more about it than he who had. Of course the mendacity of the country cousin is stupendous: but why dwell on so trite a theme? Warned by the almanack and the abnormal politeness of our diurnal letter-carrier that Christmas was at hand, it occurred to us that two or three hours of a dull evening might be agreeably—peradventure profitably—spent in and near the Highway of Ratcliff.

Has the kindest season of the year any influence on our friend Jack? *Does* he just now give himself over more to unrefined dissipation than at any other period? *Is* there no port in yonder morally tempestuous East-End into which he may poke his nose in safety, when his neighbour "the land lubber" is quietly enjoying those manifold home comforts which come under the comprehensive designation of the "social glass." These were the questions we mentally put. "Forget by which side you are called, sir, and speak the truth:" was, in effect, the rebuke administered by a humbug-hating judge to a quibbling witness. It would be well if the witnesses who go down into Jack's haunts would keep this advice in mind. Men make pilgrimages Whitechapel way determined to find a rough uncouth saturnalia where sailors most do congregate, and they seldom return disappointed. If you *will* read "crimp" in the perhaps uncomely face of every male member of the chosen people whom you meet, why you may. All the women who swarm about the Highway are not immorally distorted specimens of the heroine of "Wapping Old Stairs," however blowzed with ardent spirits, careless in respect of head dress, and down at the heel as a great many of them are. It is unjust to Jack and unjust to his haunts, to visit the latter with minds "sensitized" (as the photographers say) to receive a certain set of impressions only. Let us to-night visit the East in a more broadly receptive mood. Strive to discern as much of the life of the neighbourhood as its imperfect lighting and a partial fog will permit and report accordingly. "Two single tickets for Broad Street. Thank you. Ah, here we are—in luck. This is an express from Richmond.

Jump in, my friend." We are soon treading the asphalt pavement of Broad Street, and in brief space are engaged in conversation with a brisk omnibus conductor, who is of opinion that "'the Highway' will not be lively to-night, gentlemen, 'cos o' the weather. This 'ere fog 'll turn to rain afore long, depend upon it."

Let it be premised that on this occasion we were accompanied by a clever artist, a limner on wood, whose *graphic* pictures of East-End life and character have won him a name high in the annals of art. He is full with the idea of a pilgrimage over his old ground. "Put us down—you know, at the end of that street with the big lamp-post, close to the Highway." "All right, sir. Bill, stop at Leman Street." Bill obeys. The fog hangs heavier over these low-browed murky streets than it did above the tall temple devoted to the worship of calipash and calipee. There are visible but few of the types of pedestrians that people a low London quarter—but a very few. One mechanic, bibulous in face and incoherently eloquent of tongue attempts vainly to silence the angry clamour of a slatternly wife. Half a dozen ragged *gamins* scurry away in various directions on the approach of a burly police officer. "One more unfortunate," almost "weary of breath," plods with what must be despairing slowness through the sea of liquid mud. A young gentleman, whose *toilette* would not be considered Belgravian in Belgravia, but whose Ulster garment of great longitude, and whose amazing hat are considered the height of fashion here, is making his way in the direction of the Pavilion Theatre. There is an air of depression about the tradesmen, which is probably attributable to the weather, but which a mere stranger would unquestioningly set down as a rigid characteristic of the neighbourhood. As the matter of course, the pavement is "up." It generally is in every part of the metropolis except the most exclusive districts of the aristocratic West. The way in which the East is cared for in this particular, by the Authorities in that case made and provided, is quite touching. Once let this delightful climate of ours manifest itself in what is known afloat and ashore as "dirty weather," and, behold! up comes the pavement! For some short time we trudge through the ill-favoured neighbourhood with eyes and ears open to receive whatever impressions we may be favoured with. But things are somewhat depressed we find, and the artist observes, "Oblige me by putting away that note book, and as the night is young, let us drop in at the Sailors' Home."

It must be obvious to the meanest understanding that "the sweet little cherub who sits up aloft keeping watch o'er the life of poor Jack," has enough to do. His office is no sinecure, especially

when Jack has been paid off, and rapacious sharks of both sexes wait to devour him piecemeal. Such being the case, it is of the first importance to our great national Baby—Jack—that the cherub's watch should be occasionally relieved, or at all events, shared. Commend us then most heartily to the Sailors' Home! By no means a charitable institution in the sense that a soup kitchen or a blanket society is charitable, the noble work which it quietly achieves is nevertheless charitable in the highest degree. No more striking proof could be advanced of the necessity of a Sailors' Home than that which is daily—nay, we may say hourly—afforded in the docks on the arrival of a vessel from a foreign or colonial port. If not exactly "pull devil, pull baker," it is certainly "pull 'shark,' pull 'Home,'" and, grievous to relate, the shark too frequently gets the best of the struggle, and as a matter of course, the unhappy seaman the worst. The activity of the emissaries of the Home is beyond all praise. They are there, with their carts, ready to take possession of Jack and his goods and chattels, and convey passenger and cargo to a place of safety. He can be boarded and bedded more generously and wholesomely, and certainly much cheaper than it would be possible to so accommodate him elsewhere. Until he is paid off he can have daily advances of money. At the Home the restraint imposed upon him is so slight and apparently of so informal a character, that each man Jack might, so far as appearances go, be skipper of the establishment; and yet, notwithstanding these marvellous advantages, the splendid refuge in question is so far *not* a success, that occasionally the day's log shows a number of berths unoccupied. Far be it from us to suggest even in the vaguest manner, that the Home has not answered the expectations of its promoters. The fact that a new wing was a few years since added to the original building speaks for itself; and so likewise does the present lack of adequate stabling testify to the growth of the scheme: no, our complaint is that it has not been found requisite to add yet another wing—that, in point of fact, the merchant seamen of this country have not so far shown themselves more keenly alive to the inestimable advantages which the Home holds forth. If the restrictions imposed by the rules of the establishment were irksome, or were maintained in a martinet spirit, we could understand the low dons of the East-end being preferred to even better quarters, for Jack's love of liberty is proverbial: but the splendid institution is in all its essentials a Home. The truth is Dibdin's ideal seaman is not dead. It is true that the immortal lyricist of the navy dealt more with fighting Jack than with his more pacific mate in the Merchant

Service; but that which was in the bone of one was not absent from the flesh of the other. Even now, as in Dibdin's days, the British seaman ashore claims and exercises his right to comport himself like an engaging idiot,—to be reckless and free! And then Poll? Dibdin over again there—with a slight difference. "When lovely woman stoops to folly," in the East, the number of able seamen who follow her example is incalculable. If Jack were the least bit wiser, and Poll—

"When you are quite done moralizing we will go in." The interruption proceeded from our friend the artist. "Here we are." The ejaculation, doubtless suggested by the near approach of Boxing Night (our friend the artist has not missed patronizing the pit of the Surrey on that night for years) came from the same quarter. Seen, or guessed at from the street, the façade of the Home is not impressive. At least we are not impressed as we stumble in through the fog and against some persons who give way to profane language in consequence. Jack might be forgiven if, actuated by the best intentions, he failed to find the Home on such a night as this. We look back into the street from the hall—an apartment of spacious proportions, with a staircase on the right, a little office on the left, and a "built-off" store of seamen's clothing opposite;—we look back into the street and obtain a clearer view of the group at the entrance. A seaman who is evidently not given to advocating the cause of teetotalism from personal experience, leans against the railings and scarcely tolerates the blandishments of a female, while three or four friends—of hers—make-believe to quarrel. Jack slowly edges himself into the doorway—there is a burst of profanity, and—for this night at least—the tardily-wise seaman is safe. As we enter, a jolly group of sailors, comprising examples of several nationalities, loudly applaud three members of their party who have just put the finishing touches to a spirited Scotch reel. A glance through the little office window reveals a clerk busily engaged entering in a large book the names of some new comers. He will be disengaged in a few minutes, he says, and will then be glad to place himself at our service. A lounge across the hall to the outfitting department of the Home, a glance at some wonderful marine paintings, done in the *large* manner, and a brief and futile interview with an abnormally cheerful sailor, who *will* insist on regarding us in the light of an official of trust employed upon the establishment, serves to occupy the next ten minutes, at the end of which time the clerk aforesaid (a most courteous young gentleman and son of the superintendent) rejoins us. We will find his father presently, but meanwhile here

is the outfitting department. Formerly, a select number of tradesmen were allowed to sell their goods in the hall, but that system would not work, therefore it was decided by the Directors of the Home that the clothing of Jack should be also their care. The goods sold are the best of each particular kind. A fair profit is charged and the gains which accrue therefrom go to benefit the funds of the Home.

We are convoyed to the upper regions, and in a spacious dining room introduced to the superintendent. Lavater could not have had a better illustration of good nature than that afforded by Mr. Weston's genial face. He is king here, and he wields his sceptre (or trident?) in the gentlest, albeit the firmest manner. It is pleasant to listen to his descriptions of the models of ships with which the hall is embellished. That desk is the Chaplain's. Yes, sometimes during the winter they get up entertainments—not at all bad he could assure us (and we believe him) as a general rule they are amateurs who come, but *sometimes* they pay a professional. And you should hear the applause. None of your kid glove tapping here, sir. When this audience like anything they take care to make it known. O yes, there's a Christmas dinner. It would do our hearts good to be present then: Jack plays a pretty good knife and fork at most times. On Christmas Day especially. Well, we had seen the outfitting place: could only be called an experiment at present, but he had no doubt about its success. The tradesmen in that line were very bitter against the Home in consequence of that. But really, the way in which the poor fellows used to be robbed. It was pitiable. Oh, the names of the dormitories. Quite a matter of fancy. Men who had slept in the Canton, or Madras, or Bombay, or any of the other dormitories generally liked to sleep there again; that was all.

As we pass from the dormitories in the new wing, a fine gallery of them—three tiers, suggestive alike of the state-rooms of a first class passenger steamer, of a Swiss chalet, and of the yard of the Old Tabard Inn at Southwark—we come upon a Dutch crew just being told off by a coloured official for the night. Ah! Germans, continues our communicative guide. Our purveyor always knows when we've got a crew of them abroad. Poor fellows! Their dietary at sea can't be very extravagant. The purveyor: well, he goes out every day and buys according to the state of the market. Lays in a light or heavy stock of provisions just as things are dear or cheap. We consume a good deal of food. A matter of three hundred hungry seamen who have three meat meals are a large ship's company to provide for. We charge the men two and

twopence a day. Very little money that, for what we give them, and yet we try to make the place self-supporting. Then we take care of their money for them, and advance them money until they are paid. Do they ever forget to settle up? Well, very seldom. Men have left without paying, but as a rule they send it, sometimes a long time after. They can stop out at night until half-past eleven, and later if they ask for a pass.

A dive down into the kitchens and store-rooms, the one department rich in all the modern appliances for cooking large quantities of food for large numbers of men, and the other redolent of odours, such stores as best satisfy a seaman's requirements with a few dainties appropriate to the season thrown in. We taste the beer, and pronounce it good. We visit the stables, smile at the incongruity of the picture there,—a couple of men who look *seamen* every inch "doing up" the horses;—we wonder whether the picture is incongruous after all, seeing that Admiral Rous is the senior steward of the Jockey Club. We shake hands with Mr. Weston, and thank him for his courtesy, and re-appear in the murky streets, by this time murkier than before, in consequence of a heavy downpour of rain.

The Highway is nearly deserted. Saturnalias are not "our mission," so we turn aside from the most notorious of the dancing rooms, one of which is strangely like the other, satisfied with the most cursory peep, and deposit coins which secure us admission to the music-hall, which hereabout Jack is supposed to fondly affect. A dismal place, large enough to be "imposing," and with glass enough about it to produce what an enterprising manager would term "a gorgeous effect." But, alas! the effect is depressing. There is a want of gas, and a suggestion of ghastliness. Our friend the artist notices with dismay that himself and the writer are the only wearers of the uncomfortable hat of civilization present. Jack, who is everywhere in the hall, sprinkled along the ground-floor (stalls?) and grouped in the gallery, does not wear the chimney-pot; neither does the British costermonger. Elsewhere the performance on the stage, would be pronounced good. Here it is tolerated. The audience gape and stare, laugh gauntly, and applaud mechanically. As for the British seaman, he might be practising the part of a mute, or *blasé* dramatic critic, from any interest which he manifests in the proceedings, or from any enjoyment he derives therefrom. We leave this hall of undazzling light a prey to the deepest melancholy, persuaded beyond the most distant prospect of disproof, that if Jack does become "jolly"

under any circumstances when he gets ashore, it is elsewhere than at this hall. It had escaped us to mention that the waiters did nothing in the most vociferous manner, and that the females who were present wore a general air of well-fed-ness, and were mostly imbibing steaming hot liquors—at Jack's expense. Judging from the number of evil-browed, weasel-eyed, cheaply-bejewelled persons, of a somewhat nautical appearance, who were present at this funereal place of amusement, we should assume it to be the fashionable resort of the East-end crimp.

It was getting near midnight and raining hard as we sought relief from the melancholy effects of that dreadful hall. "Don't make yourselves strange, gentlemen: let us see you again." Our next visit was to a free music-hall, a sing-song, or what you please. The proprietor is a member of one of the twelve tribes, portly and handsome, and he is obviously no degenerate son of the chosen people in the matter of inbred politeness. When a Jew chooses to be civil, and is manly withal, his civility is a study. The room is small and narrow, and the stage is about the dimensions, and strongly resembles a soap box—inverted. For the convenience of the performers, the dressing is permitted to take place in view of the audience. "This is not Belgravia, gentlemen," observes the landlord apologetically; "we are very rough,—you must take us as we are." There is a sprinkling of sailors in the room, and their wants, as well as those of the rest of the motley assemblage, are attended to with remarkable celerity. The performance is chiefly amateur, and is as lively as that at the more pretentious establishment was dull. Order is kept with suavity and firmness, and all attempts at unseemly conversation nipped in the bud. From the really excellent singing of a young lady, whom the landlord proudly claimed as his daughter, to the vigorous efforts of "Yankee" something, the entertainment never flagged, and when ten minutes before one the landlord, with the air of a Lord Chamberlain, called for "God bless the Prince of Wales," it suddenly occurred to us that—we had enjoyed ourselves.

We shall have to travel further afield than Jewell's to find Jack's unworthy haunts, one of these nights we may attempt the task.

MERCANTILE MARINE LEGISLATION.

(From the Shipping and Mercantile Gazette of 15th December, 1871.

It is a remarkable circumstance that in the British Empire the subject almost least understood and universally shunted by our Legislators is legislation affecting Merchant Shipping. For many years, as our readers are aware, has an enormous Bill been ready at the Board of Trade, and many times has it been submitted to Parliament. At the time when Sir Stafford Northcote was President of the Board of Trade, there were evident signs of the birth of this Bill. When the Duke of Richmond succeeded Sir Stafford a Bill was ready—was introduced in the House of Commons, and it was reviewed, part by part, in these columns; but owing to circumstances, a small part of the scheme only was pressed on the Legislature and passed. After the Duke came Mr. Bright, and after Mr. Bright, Mr. Lefevre, but still nothing was done. Following Mr. Bright, we have Mr. Chichester Fortescue and Mr. Arthur Peel, but all they have been able to effect was the passing, last Session, of a few sections of the great measure, and they were only able to do this small piece of patchwork at the end of the Session, when members had been wholly worked out, by the interminable Ballot Bill and the Army Regulation Bill. It was not to be wondered at that, under these circumstances, it taxed the energies of Mr. Arthur Peel to get through with even the remnant he had undertaken, in the absence of Mr. Chichester Fortescue, to press it forward in the Commons. Indeed, there are many persons who believe that had it not been for the persistence of Mr. Plimsoll (who, by the way, knows nothing of the wants of the Shipping Interest) in obtaining a pledge from Mr. Fortescue early in the Session, even the infinitesimal Act pulled through by Mr. Peel would never have been passed.

How is it, then, that Mercantile Marine Legislation is so neglected in this essentially Maritime and Commercial State? It is not, as we have shown, that the subject is not ready for the consideration of the Legislature: we know that it has been ready for years, and that the Board of Trade, had, as a matter of fact, previously spent most of their time and energy on the measure. The fact is—and we think the sooner we make the statement the better—that shipowners are not so much concerned and as unanimous as they ought to be on the subject. The majority of the members of the Legislature look on the whole thing as a bore, and many

of the Outport members, we regret to say, evince but little interest in it, and last, but not least, the head of the Board of Trade has refused to grant a Select Committee for its practical consideration. We trust that, early in the forthcoming Session, Her Majesty's Government will, as they have already done before, announce their determination to proceed with the Bill; and we trust further, that they will accept the suggestion so frequently made in these columns, and supported by Mr. Graves, and other members best acquainted with the [subject, for the appointment of a Select Committee. Those members who, with ourselves, have proposed and pressed the appointment of a Select Committee are distinguished for their knowledge of Mercantile Marine affairs, and are imbued with a sincere desire, often expressed, of assisting, and not opposing, the right honourable gentleman in his official task.

It is not by any means necessary that every word or every clause of the Bill should be discussed in Committee, since the greater part of the Bill is merely a reprint of existing Acts and a repeal of obsolete provisions. Some points, again, can be discussed in Committee whilst others need not, or cannot be so discussed with any good results. First, we want some intelligible scheme for training boys for the Merchant Service; this can be discussed, and ought to be fully discussed, in Committee. So, also, we want some good understanding about Reserves of Merchant Seamen: this is necessary as a further part of their training, and ought to be considered with it. Then we want discussions on the subject of the wearing of foreign flags by our ships; of the principles of tonnage admeasurement; of the incidence of dock dues; of Consular interference with seamen, and Consular duties in regard to shipping; of the present standard of examination of mates; of the means to be provided for saving life on board ships at sea; of the cost of conveyance of distressed British seamen; of the charging of light dues on the Consolidated Fund; of making one survey of ships answer the ends of the Board of Trade, the Post-office, and the Emigration Board, instead of three sets of inspectors, with separate surveys and separate fees, as at present;—all these things and many more, call for discussion, and can properly be, and ought to be, considered in Select Committee. We do not hesitate, therefore, to press for a Select Committee of the House of Commons on the Merchant Shipping Bill, in the hope that it will be the means of producing and perfecting a substantial piece of legislation; and in order that we may be spared the further infliction of spasmodic, though well-meant, attempts, and crude, insignificant, and incomplete measures—like the attempts made last Session, or like the measure passed in an almost empty House at its close.

ON CORRECTING THE SUN'S DECLINATION.

By J. GORDON, A.M., Morden College, Blackheath.

I.—NOTATION.

1.	2.	3.	4.	5.	6.	7.
Greenwich Date at Noon.	Declination.	Old Difference for 1 hour.	Second Difference.	Old Difference of 1 hour.	New Difference for 1 hour.	Second Difference.
G^d	D	$\frac{D_1 - D}{24} = d$	$d_1 - d = \delta_2$	$d_1 - \delta_2$		
G^{d_1}	D_1	$\frac{D_2 - D_1}{24} = d_1$	$d_2 - d_1 = \delta_2$	d_1	$\frac{D_2 - D}{48} = \Delta_1 = \frac{d + d_1}{2} = d_1 - \frac{1}{2}\delta_2$	$D_2 - \Delta_1$
G^{d_2}	D_2	$\frac{D_3 - D_2}{24} = d_2$		$d_1 + \delta_2$	$\frac{D_3 - D_1}{48} = \Delta_2 = \frac{d_1 + d_2}{2} = d_1 + \frac{1}{2}\delta_2$	$= \delta_2$
G^{d_3}	D_3					

II.—EXPLANATION.

1. $G^d, G^{d_1}, G^{d_2}, G^{d_3}$ are the Dates for four consecutive Greenwich noons.

2. D, D_1, D_2, D_3 are the Sun's Declinations corresponding to these times.

3. d, d_1, d_2, d_3 are the *Old* "Diffs. for 1 h." (as given in the *Nautical Almanac* previous to 1863), and found as stated in the column 3.

4. δ_2 is the *2nd Diff.* or the difference between the differences d , and is supposed to be constant; which it is for all practical purposes.

5. Contains the *Old* "Diffs. for 1 h." expressed in terms of d , and δ_2 , and are easily deduced from column 4.

6. Contains the *New* "Diffs. for 1 h." (as given in the *Nautical Almanac* since 1862). The mode of deducing them from the Declinations is shown, and the equivalents are thus found:—add

the 1st and 2nd Equations in (3), and we have $\frac{D_2 - D}{24} = d + d_1$
 $=$ (by 5) $2d = \delta_2, \therefore \frac{D_2 - D}{48}$ or $\Delta_1 = d_1 - \frac{1}{2}\delta_2$. In same manner

from (5.), and 2nd and 3rd Equations in (3.), we find $\frac{D_2 - D_1}{48}$ or $\Delta_2 = d_1 + \frac{1}{3}\delta_2$.

7. It is evident that $\Delta_2 - \Delta_1 =$ (by 6.) $d_1 + \frac{1}{3}\delta_2 - (d_1 - \frac{1}{3}\delta_2) = \delta_2$. That is the *new* is equal to the *old 2nd diff.*

COROLLARY.

We may easily deduce the *old* "diffs. for 1 h." from the *new* :— for (6.) gives $\Delta_1 = d_1 - \frac{1}{3}\delta_2$, and $\Delta_2 = d_1 + \frac{1}{3}\delta_2$; therefore by adding these and then dividing by 2, we have $\frac{\Delta_1 + \Delta_2}{2} = d_1$. Or by transposing the 1st of these equations, we have $d_1 = \Delta_1 + \frac{1}{3}\delta$.

III.—FORMULA FOR DECLINATIONS.

Using *old* "diffs. for 1 h." Let the declination D be required for the Greenwich time $G_1 + t_1$ where t is expressed in hours and decimals of an hour; and let $t^1 = 24 \text{ h} - t$.

The declinations form the series D_1, D_2, D_3 , etc., and the 1st *diffs.* of the terms are $D_2 - D_1, D_3 - D_2$, etc. But (by second Equation, I. 3), $D_2 - D_1 = 24d_1$, and (by third Equation in I. 3), $D_3 - D_2 = 24d_2$. But, by (5.), $d_2 = d_1 + \delta_2$, $\therefore D_3 - D_2 = 24d_1 + 24\delta_2$.

The difference between these 1st *diffs.*, will be the 2nd *diff.*, and equal to $24\delta_2$; which is supposed constant.

Now the n th term (after the 1st term) of any such series is = 1st term + n . 1st *diff.* + $n \cdot \frac{n-1}{2}$. 2nd *diff.* Here 1st term is D_1 , and

$n = \frac{t}{24}$ also the required term is D . Therefore $D = D_1 + \frac{t}{24}$.

$24d_1 + \frac{t}{24} \cdot \frac{\frac{t}{24} - 1}{2} \cdot 24\delta_2$. But $\frac{\frac{t}{24} - 1}{2} = \frac{1}{2} \cdot \frac{(t-24)}{24} = -\frac{t^1}{24}$;

$\therefore D = D_1 + \frac{t}{24} - \frac{1}{2} \frac{t t^1}{24} \delta_2$ or $= D_2 + t \left(d_1 - \frac{1}{2} \frac{t^1}{24} \delta_2 \right)$

This gives as easy a Rule to that in the *Nautical Almanac*, where the *New* "Diffs. for 1 h." are used, and proves that there was no necessity for adopting the *New Diffs.*

IV.—FORMULA FOR DECLINATIONS,

Using New "Diffs. for 1h."

By formula given in II., substitute $\Delta + \frac{1}{2}\delta_2$ ord. (Sec. I. Cor.), and for $-\frac{\frac{1}{2}24-t}{24}\delta_2$ substitute $-\frac{1}{2}d_2 + \frac{\frac{1}{2}t\delta_2}{24}$; and we have $D = D_1 + t\left(\Delta_1 + \frac{\frac{1}{2}t\delta_2}{24}\right)$ which gives the rule used in the *Nautical Almanac*.

REMARK.

The application of this Rule often puzzles practical navigators, because the term *difference* is used in its Algebraical, not in its Arithmetical sense, and consequently when two Declinations are of opposite names, we must *add* them to obtain their *difference*. It would be plainer to substitute the term *Change*. We may here remark that the same paradox would to an arithmetician be removed, were we to adopt *Change of Lat.* and *Change of Long.*, instead of *Diff. Lat.* and *Diff. Long.*, and common sense would direct how to use the quantities instead of burdening the memory with technical Rules.

Again, instead of observing whether declination be *increasing* or *decreasing*, it would be simpler to notice whether the Sun be moving towards the N. or towards the S. Hence the following

RULE.

1. Mark the "*diff. for 1 h.*," which stands opposite the given day, either N. or S., according as the Sun is moving towards the N. or S., estimating from one day back to one day forward from the given day. And name similarly the "*diff.*" which immediately follows.

2.* Find the *change* between these "*diffs.*," which will be what is called the *2nd diff.*: finding and naming it by the same Rule as for *Diff. Lat.* in *Mercator's Sailing*.

3. Multiply the *2nd diff.* by $\frac{1}{2}$ of the Greenwich time ($= \frac{1}{2}t$), and divide the product by 24: this gives the *correction of 1st diff.*, and of same name as *2nd diff.*

NOTE.—Instead of the above method, we may double the Greenwich time and increase this by $\frac{1}{2}$ th of the Greenwich time, then multiply the *2nd diff.* by this, and cut off two more decimal figures than would be required by the usual Rule.

But neglecting $\frac{1}{2}$ th will only cause an error of 0.1 in the declination, at the maximum.

For $\frac{\delta_2 \times \frac{1}{2} t}{24}$ when \times ed by $\frac{4\frac{1}{2}}{4\frac{1}{2}} = \frac{\delta_2 \times (2t + \frac{1}{2}t)}{100}$ which is the Rule given. And neglecting the $\frac{1}{2}$ th t , will give an error of $\frac{t \delta_2}{1200}$ in correction of Δ_1 , or of $\frac{t^2 \delta_2}{1200}$ in declination. But this will be maximum when $t = 12$ and $\delta_2 = 1.18$: therefore maximum error of declination = $\frac{12 \times 12 \times 1.18}{1200} = \frac{12 \times 1.18}{100} = 0.1416$.

4. Apply this *correction* or *change* to 1st *diff.* (Δ_1) by same Rule as in a DAY'S WORK for finding *latitude* in: this gives the *corrected 1st diff.*

5. Multiply the *corrected 1st diff.* by the Greenwich time (t), and apply the product to the declination opposite to noon of the given date by the same Rule as used in 4th above.

V.—CORRECTING DECLINATIONS BACKWARDS,

i.e., from the Declination of to-morrow towards that of to-day (or given day).

It is evident that if we substitute t^1 for t , and t for t^1 , also D_2 for D_1 and Δ_2 for Δ_1 ; but δ_2 the same in quantity as before (although it must, as well as Δ_2 , be named the opposite way from that in IV.):—then the formula in IV. thus changed will give

$$D = D_2 + t^1 \left(\Delta_2 + \frac{\frac{1}{2} t^1 \delta_2}{24} \right)$$

$$\text{And from III., } D = D_2 + t^1 \left(d_1 - \frac{\frac{1}{2} t \delta_2}{24} \right)$$

NOTE.—In changing III., we do not change d_1 into d_2 , because d_1 is the actual hourly *diff.* between D_1 and D_2 , whether we reckon forwards or backwards, although of an opposite name, so also is δ_2 from its former name.

This follows from the nature of a series; but we could easily obtain the same results algebraically by substituting in III. and IV., the equivalents for D_1 , Δ_1 , etc., as stated above: to show this investigation however is necessary.

VI.—TO FIND THE MAXIMUM DECLINATION, AT THE SOLSTICES.

ALSO REQUIRED THE GREENWICH TIME WHEN IT HAPPENS.

Let $G^d_1 + t^d$ be the Greenwich time, and D the maximum declination.

$$D = D_1 + t \left(\Delta_1 + \frac{\frac{1}{2} t \delta_2}{24} \right) = \text{maximum.}$$

$$\therefore t \left(\Delta_1 + \frac{\frac{1}{2} t \delta_2}{24} \right), \text{ or } t \Delta_1 + \frac{\frac{1}{2} t^2 \delta_2}{24} = \text{maximum.}$$

$$\text{And taking differential, } \Delta_1 + \frac{t \delta_2}{24} = 0.$$

$$\therefore t = \frac{-\Delta_1 \times 24}{\delta_2}$$

Now if G^{d_1} be the proper date, t will be positive, and this will be when Δ_1 changes its name next day following: hence G^{d_1} can be easily selected.

NOTE.—If to the apparent obliquity of the ecliptic there be applied the Latitude of the Sun (by the same Rule as used in a DAY'S WORK, when finding the *lat. in.*), the maximum declination should be found.

VII.—TO FIND THE TIME $G^{d_1} + t^h$ CORRESPONDING TO A GIVEN DECLINATION D .

We first select G^{d_1} so that D falls between D_1 and D_2 ;

$$\text{then } D = D_1 + t \left(\Delta_1 + \frac{\frac{1}{2} t \delta_2}{24} \right)$$

$$\therefore \frac{t^2 \delta_2}{48} + t \Delta_1 = D - D_1$$

$$\text{and } t_2 + \frac{48 \Delta_1}{\delta_2} \cdot t = (D - D_1) \frac{48}{\delta_2}$$

This equation being solved we shall have

$$t = \frac{24 \left[\sqrt{(\Delta_1)^2 + \frac{1}{12} (D - D_1) \delta_2} - \Delta_1 \right]}{\delta_2}$$

NOTE.—This, of course, is the direct method of finding t ; but it would be useless when δ_2 is small in comparison of Δ_1 : in which case it would be preferable to find t_1 by the method of

APPROXIMATION.

Rejecting δ_2 , $D = D_1 + t \Delta_1$, and $t = \frac{D - D_1}{\Delta_1}$; call this value of $t = t_1$. Then calculate the declination for t_1 , and $D - \text{this declination}$ will be the connection of t_1 : this will, in general, be sufficient, but another approximation can be made if there be any considerable correction.

VIII.—TO FIND WHEN THE DECLINATION IS 0° , AT THE EQUINOXES.

This is a particular case of VII., but the formula would be inappropriate on account of the smallness of δ_2 . In this case therefore we should approximate; and D being 0_1 we have $t = \frac{-D_1}{\Delta_1}$ which is sufficiently accurate.

IX.—ERROR OF THE APPROXIMATE METHOD WHEN THE “*Old Diff's.* for 1 h.” ARE USED.

NOTE.—The *Approximate Method* is when we reject 2nd differences, and calculate the correction of declination by means of the 1st *diff.* uncorrected by the formula $= t d_1$. This, of course, gives the same result as the method given by some authors who use proportional logarithms for 24 h.: because it is the same as stating 24 h : t h : : $D_2 - D_1$:

$$\frac{(D_2 - D_1) t}{24} = t d_1 \text{ (by 2nd equat. in I. 3),}$$

$$\text{By III., } D = D_1 + t d_1 - \frac{\frac{1}{2} t t^1 \delta_2}{24}$$

And when we calculate approximately $D = D_1 + t d_1$;

Hence the *correction* will be the same when we correct *backwards*, i.e., take $D = D_2 - t^1 d_1$:

because $D_2 = D_1 + 24 d_1$ (by 2nd equation in I. 3), and $t^1 d_1 = (24 - t) d_1 = 24 d_1 - t d_1$.

Therefore $D_2 - t^1 d_1 = D_1 + t d_1$.

COROLLARY.

The *correction* or error will be a maximum when $t t^1$ is a maximum $= t(24 - t) = 24 t - t^2$.

Differentiate, and $24 - 2 t = 0$, $\therefore t = 12$,

$$\text{and } \textit{correction} = \frac{\frac{1}{2} t t^1 \delta_2}{24} = \frac{\frac{1}{2} \times 12^2 \delta_2}{24} = 3 \delta_2.$$

X.—ERROR OF THE APPROXIMATE METHOD,

When the New “*Diff's. for 1h.*” are used.

By IV., $D = D_1 + t \Delta_1 + \frac{\frac{1}{2} t^2 \delta}{24}$, and when we calculate approximately $D = D_1 + t \Delta_1$:

D

Hence the *Correction* of the latter is $\frac{\frac{1}{2} t^2 \delta_2}{24}$.

NOTE.—This *correction* will not be the same, when we correct *backwards* in this case, as it was in VIII. Because the error *backwards* will be $\frac{\frac{1}{2} (t^1)^2 \delta_2}{24}$. There is also another distinction, we use Δ_2 instead of Δ_1 in calculating *backwards*.

COROLLARY.

As the *Corrections* are proportional to t^2 and $(t^1)^2$, it is evident that if the time t is less than 12h., t^1 will be greater; and *vice versa* when t is greater than 12h., t^1 will be less. Therefore it will be preferable to correct declination from the nearest noon, as the error will be the less: whereas this was indifferent in the case of the *Old Diff.* for 1h. (see V. *Note*).

XI.—COMPARISON BETWEEN THE ERRORS IN THE OLD AND NEW.

In the *Old* method, the calculation was all but universally instructed to be made for t that is *onwards*; consequently the errors being $\frac{\frac{1}{2} t t^1 \delta_2}{24}$ for *Old* and $\frac{\frac{1}{2} t^2 \delta_2}{24}$ for *New*, it is evident that the *New* is more correct when t is less than 12h., but the *Old* has the preference when t is greater than 12h.

If, however, we adopt the method of always correcting from the *nearest noon*, it is evident that the *New* is always preferable: because if t is less than 12h., the *New* error $\frac{\frac{1}{2} t^2 \delta_2}{24}$ is less than *Old* $\frac{\frac{1}{2} t t^1 \delta_2}{24}$; and if t is greater than 12h., the *New* error $\frac{\frac{1}{2} t^2 \delta_2}{24}$ is less than the *Old* error.

FIRST COROLLARY.

The errors differ by $\frac{\frac{1}{2} t t^1 \delta}{24} - \frac{\frac{1}{2} t^2 \delta}{24}$, which will be a *maximum* when $t t^1 - t^2 = \text{max.}$ or $24 t - 2 t^2 = \text{max.}$; therefore, *differencing*, $24 - 4 t = 0$, and $t = 6$ h. In like manner if we calculate *backwards*, we shall find $t^1 = 6$, and therefore $t = 18$; so that t is either 6 or 18. Hence the *maximum* preference of the *New* over the *Old* is $\frac{\frac{1}{2} 6 \times 18 \delta^2}{24} - \frac{\frac{1}{2} \times 36 \delta^2}{24} = \frac{36 \delta^2}{24} = \frac{3}{2} \delta^2$.

SECOND COROLLARY.

By IX. *Corol.*, it was proved that the *max.* error of the *Old* method was $3 \delta_2$.

And it is evident that the *New* $\frac{1}{2} t^2 \delta$ will increase as t increases; which at its *max.* has been fixed at 12h.; because, if above 12h. we would calculate with t^1 . Hence *max.* error of *New* = $\frac{1}{2} \times 144 \delta_2$
 $= 3 \delta_2$: viz., the same as the *Old*.

REMARK.

Hence (when the approximate method is used), it follows that the utmost advantage gained by using the *new* instead of the *old* "diffs. for 1 h." being less than 2" (in 1870, δ_2 is at its maximum in December and = 1.18", therefore $\frac{1}{2} \delta_2 = 1.77"$). To prevent confusion to practical navigators, would it not have been preferable to have retained the *old* "diffs. for 1 h." especially as the calculation for 2nd *diffs.* is equally easy in both methods (see III. and IV.).

XII.—ON FINDING THE LATITUDE FROM A MERIDIAN ALTITUDE.

This Problem (to use a strong and rough phrase) may be truly said to have been more shockingly murdered than any other Problem in all navigation.

1st. In the extensively used "Epitome on Navigation" by Norie, as well as in others, the following Rule is given:—

If Long. W., add correction if Declination be increasing.

" but subtract if " decreasing.

If Long. E., subtract if " increasing.

" add if " decreasing.

This Rule, however, is erroneous twice a year, viz., at the Solstices, when the Declination decreases from the greatest declination, whether we reckon forwards or backwards. Whereas the Rule assumes that a declination if increasing forwards, must decrease backwards; and *vice versa*.

2nd. When the *old* "diffs. for 1 h." were used, a candidate at the Marine Board Examination would have been plucked and fined, if he corrected the Declination for Longitude by taking the declination for ship's date, and correcting by means of the "diff. for 1 h." as found opposite to that day. Whereas now he would be liable to the same penalties if he did not use that "diff." (which is un-

doubtedly the correct way). Because if we used Δ_1 instead of Δ_2 (which we ought not to do) just the same as in the case of the old "diffs." we used d_1 and not d_2 , we would incur a much larger error. For in this case we are correcting *backwards* for t^1 as the long. is E., and therefore $D = D_2 - t^1 \Delta_2 - \frac{\frac{1}{2} (t^1)^2 \delta_2}{24}$ and $\Delta_2 = \Delta_1 - \delta_2$ (because we are reckoning *backwards* and therefore write t^1 , $-\Delta_2$, and $-\delta_2$, instead of t^1 , Δ_1 and δ_2 in formulas V. and I. 7).

$$\text{Consequently } D = D_2 - t^1 \Delta_1 + t^1 \delta_2 - \frac{\frac{1}{2} (t^1)^2 \delta_2}{24}.$$

But $D = D_2 - t^1 \Delta$, approximately; therefore the correction of the approximate method is $t^1 \delta_2 - \frac{\frac{1}{2} (t^1)^2 \delta_2}{24}$: and as the highest value of $(t^1) h$ is 12 h (or 180°), the maximum is $\left(12 - \frac{\frac{1}{2} \times 12^2}{24}\right) \delta_2 = 9 \delta_2$. This on 22nd December, 1870, is $10^{\circ} 6' S$, because $\delta_2 = 1.18 S$, reckoning *backwards*.

3rd, Therefore the correct Rule for finding the nearest approximation is as follows:

RULE. Take the declination also "*diff.* for 1h" for given ship's date; then in W. Long. correct as for t (IV.); but in E. Long. correct as for t^1 (V.). This will prevent an error of $\frac{2}{3} \delta_2$ (XI.).

XIII.—CORRECTING LOG. SINES, ETC., FOR SECOND DIFFERENCES.

The *differences* are given in Mathematical Tables for $100''$, as between the Sine for the given deg. and min. (call this D_1), and for $1'$ more (call this D^2); and the *diff.* is $= \frac{(D_2 - D_1) \times 100}{60} = d_1$. Similarly for d_2 , then $d_2 - d_1 = \delta_2$.

Let the Sine of $D^\circ M' S''$ be required.

Then it is easily deduced from III. that:

$$\text{Sine } D^\circ M' S'' = \text{Sine } D^\circ M' + \frac{S}{100} \left(d_1 - \frac{(30'' - \frac{1}{2} S) \cdot \delta_2}{60} \right)$$

XIV.—CONCLUSION.

One practical conclusion from the preceding is, that if we correct Declinations from the nearest noon, the greatest error by the approximate method will be $3\delta_2$; and this method should therefore be always adopted.

It may be observed that after correcting approximately, if we wish to correct for *2nd differences*, we must apply to the approximate Declination the correction of Δ_1 for *2nd diff.* as found in III. Rule 3 after this is multiplied by t .

STORM SIGNALS.

Meteorological Office, 116, Victoria Street,
London, S.W., December 12th, 1871.

To the Editors of the Nautical Magazine.

Dear Sirs,—I send for your information extracts from two notices which have lately been received at this office, relating to telegraphic intelligence of storms.

The signals exhibited at the Scaw are in connection with the Meteorological Institute at Christiania, and only came into operation this month,—but those issued by the Sydney Observatory, as probably you are aware, have been in operation for several years, on the coast of New South Wales.

I am, yours faithfully,

ROBERT H. SCOTT, *Director.*

STORM SIGNALS AT THE SCAW.

IN connection with storm warnings, communicated by the Meteorological Institute at Christiania, storm signals will be shown from the signal station on the Scaw from the 1st of December, 1871, and until further notice, whenever a gale is or may be expected in the course of one, or, at the most, of two days, in the North Sea or Skagerrack.

Most gales begin, in the waters referred to, with the wind at S.; but when a gale blows from the S. we may always be prepared for its veering to W. Some gales, including very heavy ones, set in when the wind has veered from N.W. to N.

For signals there will be employed a drum and a cone, which will be hoisted to the gaff at the signal staff, and will, as a rule, be kept up thirty-six hours. The drum above and the cone below, with its point downwards, indicates a S. gale; the drum below and

the cone above, with the point upwards, a N. gale. If the direction of the gale cannot be predicted with some probability, a drum only will be hoisted.

The signal is to serve only as a warning, and must not be regarded as a sure presage.

It must remain the concern of the party interested whether he will pay attention to it or not. When the signal is seen, the experienced shipmaster (or inhabitant of the coast) ought to take the most particular notice of all the signs which the aspect of the atmosphere, the direction and force of the wind, and the meteorological instruments may give at the place itself.

STORM SIGNALS ON THE COAST OF NEW SOUTH WALES.

The existence of gales which are likely to endanger shipping, will be signalled at the principal telegraph stations, on the coast of New South Wales, in the following manner, viz. :—

The signal masts will support two yards, which are to cross each other at right angles, in the direction of the cardinal points of the compass, the yard arms denoting, respectively, north, east, south, and west; midway between north and east will indicate north-east, etc.

A violent squall will be represented by a conspicuous diamond-shaped signal.

A heavy sea will be represented by a drum-shaped signal.

Gale, with clear weather, will be represented by a diamond-shaped signal over a drum.

Gale, with thick weather and rain, will be represented by a diamond-shaped figure with a drum over it.

The direction from which a gale is blowing will be indicated by the particular yard-arm between which and the mast-head the geometrical signal is suspended.

Place where gale or squall is blowing will be shown by hoisting the numerical flags already in use at Sydney, Newcastle, and other coast stations.

Gales that are general over a large portion of the coast, will be indicated by the geometrical figures, without the mast-head flags.

LIFE-BOAT SERVICES IN NEW SOUTH WALES.

Our relations in Australia seem to be emulating the admirable pluck and heroism so often displayed by the life-boat crews at home, if we may judge from an account which has been kindly furnished to us by a subscriber in New South Wales. It is very pleasant to know that English bravery, prompted by kind and generous feelings, flourishes and bears such good fruit in far-off regions. We rejoice to think that Great Britain extends to all quarters of the globe, not only in respect of her geographical boundaries, but as regards the admirable national characteristics which have conduced so greatly to our prosperity. Such incidents as the following shew that those national virtues are working well to promote civilization and progress by means of the softening and refining influences of humane, generous, and heroic feelings.

“The barque *Catherine* a few days after leaving Newcastle Harbour laden with coal, experienced a heavy S.S.E. gale, and in a short time she became so leaky that serious apprehensions were entertained for the safety of the crew. Finding the leak increasing, Captain M’Michen deemed it advisable to “run back,” and he accordingly did so, endeavouring to make the port of Newcastle. Shortly after daylight Captain M’Michen believed that he was in the neighbourhood of Port Stephens; but owing to the mist and rain he was unable to see the land. When the weather cleared off a little, however, he discovered that he was off Redhead. The barque was at once hove-to under main-topsails; but still the leak increased, although all hands were kept at the pumps, and it became apparent at length that unless the vessel was beached she would founder. The attempt was accordingly made, but the barque took the ground on the outer bar or break, about one hundred yards from the beach. The crew were thus placed in a most perilous position, the sea making clean breaches over the vessel. An attempt was made to reach the shore by means of life-buoys, but the current took these in an opposite direction, and it had ultimately to be abandoned, several of the men experiencing a very narrow escape from drowning. Here a heavy sea carried the captain overboard, but he grasped a rope and was hauled on board again. The wind was still strong from S.E., and a heavy sea was running along the coast, causing a tremendous surf to roll in on the sandy beach.

The tug, with the life-boat in tow, arrived at the scene of the wreck about 11 o'clock; the position of the barque was some five miles to the southward of Newcastle, on a sandy beach, about fifty miles north of Port Jackson, between Big and Little Redhead, but nearer the former, and nearly opposite what is known as the Banana Gardens. The barque was lying about 150 yards off the shore, stem on, with all her canvas spread; being laden with coal, was the cause of taking the ground so far to seaward. The sea broke heavily on board, which caused the crew to seek shelter in the bows. Before the arrival of the life-boat the crew endeavoured to float a line ashore by means of life-buoys, fenders, etc., attached to lines, but all to no purpose, as the current setting north drifted the floating buoys seaward. The barque had scarcely taken the ground before the sea began to make great havoc with her. The first sea swept her deck, carrying away deck-house, cabin furniture, and everything moveable. As each succeeding sea broke on board the damage increased. The mizen and main mast began to shake in an alarming manner, and every moment they were expected to go over the side; in fact, it was surprising how the vessel held together, seeing the tremendous seas continually striking her with terrific force.

“As the vessel continued to break up, the anxiety for the safety of the crew increased, and the arrival of the life-boat was hailed with intense satisfaction by the concourse of people assembled on the beach. No sooner did the life-boat cast off from the tug than they pulled well to windward, and when sufficiently near the wreck let go the kielick. The boat quickly drifted to leeward; while doing so a heavy sea struck her, which filled her, breaking the two steering oars; another sea followed in quick succession, which carried away four of the port oars, breaking some of the others. Fortunately there were fourteen spare oars in the boat, and she succeeded in getting pretty close under the bows of the barque, although the surf frequently filled the boat, but she quickly freed herself and behaved beautifully throughout the trying occasion. The crew exerted themselves most nobly. Too much praise cannot be accorded them; they manfully stuck to the boat in its perilous position, and by dint of perseverance and manly courage succeeded in saving the lives of ten men. Having got near the barque, the man (Dunnet) in the bows attempted to throw a line on board, but the sea broke so heavily, tossing them about in all directions, and frequently covering them in the surf, that it was some time before his efforts were crowned with success; but he bravely stood to his post, and the line was passed on board by which means the un-

fortunate crew of the ill-fated barque *Catherine* were one by one hauled through the heavy surf into the life-boat, and thus rescued from a watery grave; one only, the first man that jumped into the sea before the line was on board, missed the boat, and was for some time tossed about in the surf. Happily he caught hold of some portions of the wreck, which sustained him for some seconds, but the sea soon tossed him off his frail craft, and amidst fearful excitement, he was seen to bravely strike out for the shore. Several parties stripped to swim off to meet him; a half-caste lad, with a rope tied round him, first made the attempt, but a piece of drift wood striking him on the chest, caused him to abandon the attempt.

“A man named Sullivan bravely rushed out, and happily, caught hold of the poor fellow (who was in a very exhausted condition), and with assistance brought him safely on shore, when, after remedies, he soon came round. As each man was taken into the life-boat the people on shore gave three hearty cheers. The excitement and anxiety was intense, especially when a very heavy sea struck the boat, completely enveloping her, and hiding her from view for some seconds. After the whole of the crew were safely in the life-boat an attempt was made to get her through the surf out to sea, to where the tug was lying in waiting; but although they struggled hard, the sea broke too heavily and rapidly; the oars were either carried away or broken, and there was nothing for it but to cut the kellick and make for the beach. Three oars were all that remained. With these they managed successfully to beach the boat without injury. On the men and crew landing they were loudly cheered by those on the beach, and their immediate wants, as far as practicable, supplied. Captain Allan, the harbour master, was present with life lines, etc., and in case it would be of service, had ordered the mortar apparatus to be brought out, but its services were not required. Several of the Water Police were early on the spot, besides a large number of horsemen and pedestrians. The splendid manner in which the life-boat behaved, and the noble attitude of the crew, is the general theme of conversation; it is certainly the heaviest surf in which the life-boat has ever been in, and every one seems delighted with its performance of this morning and the courage displayed by the crew.”

HEALTH OF THE NAVY.

WITH reference to our paper in the December number, relative to the health of the Navy, we now take the liberty of reprinting the following article from the *Broad Arrow* in continuation of the subject, and as shewing to some extent the allocation of disease in various parts of the world.

“In concluding our remarks under this head, it is a pleasure to revert to one striking instance in which the preventible causes of disease have been seriously dealt with by the authorities. On the West Coast of Africa and Cape of Good Hope Station there was in the year 1869 a reduction in the number of cases equivalent to 248·1 per 1000 of force as compared with the previous year. The invaliding rate and the death rate were also both reduced, the former to the extent of 19·5 per 1000 of force, and the latter to the extent of 2·6 per 1000. This so far satisfactory result is to be accounted for by the adoption of a policy similar to that we have advocated for Rio and Valparaiso—namely, the system of cruising. The advantages of the new system appear by contrast with what occurred in the case of crews which were exposed to the malaria of rivers even for a few days. Thus, there were fifty-two cases of remittent fever in the *Fly*, which had proceeded on duty up the River Congo; forty-four cases in the *Lynx*, the crew of which were exposed to the miasma of the River Niger; forty-four cases in the *Pioneer*, up the same river; and eighteen cases in the *Sirius*, all attributable to a short stay at Lagos and St. Paul’s de Loanda. Testimony is borne by this section of the report to the beneficent working of the much-abused Contagious Diseases Act. The infection was greater at Cape Town than at Simon’s Bay, where local circumstances favoured the more rigid application of the Act; and the consequences were more serious still at Sierra Leone, where the Act could not be made to work at all, owing to the habits of the entire negro population. The difficulties seem to be insuperable here and at all places down the coast. Power to carry out the Act cannot be given to the native police, as they would use it as an engine to carry out their private ends, instigated by revenge or pique, or even for the mere pleasure of giving annoyance to others.

“The squadron on the East India Station in 1869 consisted of twelve vessels, viz., two of the fourth-rate, one of the sixth-rate, four sloops, two gun-vessels, and three troopships, with a mean

force, corrected for time of 2300. The total number of cases of disease and injury entered on the sick list was 4277, which is in the ratio of 1859·5 per 1000, being a decrease compared with the previous year, equal to 218·8 per 1000. There was also a decrease in the invaliding rate to the extent of 21·7 per 1000, but an increase in the rate of mortality equal to 1·6 per 1000. The total average number of men sick daily was 119·7, which is in the ratio of 52 per 1000, showing a reduction as compared with the previous year of 13·9 per 1000.

“The cases of smallpox which occurred on board the *Forte* and the *Jumna* at Muscat and Bombay were caused by infection ashore, and the progress of the epidemic was speedily stopped by isolation. Two cases occurred in the *Octavia* during the first week in March, the same time of year at which the epidemic of 1866 broke out at Bombay. The prompt removal of the patients to hospital, and the re-vaccination of all who could not show satisfactory signs of protection, prevented the spread of the contagion. Thirty-eight persons were vaccinated from a native child sent off by the superintendent of vaccination in Bombay, twenty-nine of which ‘took well.’ It seems to be proved by the statistics that smallpox is more apt to attack Europeans at Bombay in early spring than at any other season of the year. There were two cases of smallpox in the *Star*, caused perhaps by contact with captured slaves. The surgeon observes, ‘I had little fear for the ship’s company, as all were vaccinated, and had passed unharmed, with one exception, through a severe epidemic of the disease which occurred among a number of slaves on board in the previous year.’ This surely scores one in favour of the policy of vaccination!

“Two cases of cholera occurred in the squadron, both of which proved fatal; one in the *Dryad*, during the passage from Zanzibar to Bombay, the other in the *Malabar* at Bombay. The interest of these cases—or rather, of the first of them—arises from the report of the surgeon, Dr. O’Connor, who, supported by the opinion of the well-known African traveller, Dr. Kirk, traces the origin of this fearful scourge to *the interior of Africa*, and not to its ‘endemic home’ as it has been called, in Lower Bengal or elsewhere in India. It had been previously noticed that the disease, when it appeared on the African seaboard, had appeared first *inland*, and that it advanced to seaward; yet little attention was paid to the fact, owing to the preoccupation of men’s minds with the notion that cholera was of Asiatic origin, and perhaps to the difficulty that would be felt as to the possibility of the disease crossing the desert of Morocco. The conclusion now arrived at is, that cholera reaches

the coast from the interior of Africa by the Pagany route. Between the end of November, 1869, and June, 1870, it was estimated that 30,000 persons were carried off by the cholera in Zanzibar alone, but Dr. Kirk reduces the number to something between ten and fourteen thousand. The disease was equally, if not more virulent, amongst the shipping in the harbour; some vessels were forced to put back into Zanzibar within a few days after leaving port, having lost more than half their crews. The slaves and negro population were almost the sole sufferers at first; a little later the poorer Arabs, and later still the richer Arabs and Europeans. It was remarked, too, that the purer the African type, and the lower in the scale of civilization, the greater aptitude did they seem to possess for catching the contagion, the greater the severity did it show, and the more fatal did it prove. It was remarked also that recent arrivals, and persons shifting their quarters, or otherwise attempting *to fly from the disease*, showed a remarkable susceptibility to the contagion. Without extending further these details, it must be obvious that the medical men attached to the Naval Service who have contributed to the report, have furnished valuable *data* to their profession, and that the idea of compiling this periodical census of their experiences and results is one that cannot be too highly commended, whether in the interests of the Naval Service or of the country at large.

“It is noticeable, again, that the worst and most numerous cases of that form of disease recently legislated against occurred at stations where the Act could not be applied, as at the Seychelles Islands and Bombay; the registration at the latter place having been only for purposes of taxation, and, therefore, not remedial. We have repeatedly called attention to facts of this kind in the course of our remarks on the health of the Navy, because the Act is still strenuously opposed by certain classes, and will probably be the subject of some discussion in the ensuing session. On the China Station, to which we have now to call attention, there were in 1869, about fifty men on an average daily incapacitated from service from the disease referred to alone. In the *Ocean* alone there were one hundred and seventeen cases, which, for the most part, originated at Yokohama, which has the character of being the most infected place in the East. In the *Pearl* there were fifty-two cases; in the *Rodney*, ninety-eight; in the *Princess Charlotte*, twenty-nine; in the *Cormorant*, nineteen. Most of these cases were contracted at Yokohama and Nagasaki, before the system of examination was organised at the former place. At Nagasaki, we believe, no sanitary measures have even yet been adopted. There is nothing

more in the Report of special interest in connection with the China Station. Of the Australian Station, it is scarcely necessary to remark, still less has to be said; while to speak of the vessels comprised in the 'Irregular Force,' would only be to go over again much of the ground already traversed.

"To sum up; the total force in the Service afloat, corrected for time, in the year 1869, was 48,820; and the total number of cases of disease and injury entered on the sick list was 59,326, which is in the ratio of 1,221·9 per 1000, being a decrease compared with the previous year of 30·5 per 1000. The lowest sick rate was on the Home Station, and the highest on the China Station; but let us give the exact figures. The daily proportion of sick on the Home Station was 38·3 per 1000 of force; on the Mediterranean Station it was 53·0 per 1000; on the North America and West India Station it was 51·6; on the South-East Coast of America, 44; Pacific, 58·2; West Coast of Africa and Cape of Good Hope, 57·1; East Indies, 52·9; China, 61·7; Australia, 55·9, and in the irregular force, 46·7. Compared with the previous year, the greatest reduction in the invaliding rate was on the East Indies Station, where it was equal to 21·7 per 1000. This is readily accounted for by the fact that in 1868 the squadron on that station suffered severely from exposure in the Red Sea in connection with the Abyssinian Expedition. There was also a reduction in the ratio of invaliding on the West Coast of Africa and Cape of Good Hope Station to the extent of 19·5 per 100. On the other hand, there was a large increase in the rate of mortality on the North American and West Indies Station, where it was as much as 14·2 per 1000. Thus the *compte rendu* is, on the whole, a chequered one, but with a positive balance of gain in the Profit and Loss. It proves that medical and sanitary science in the Royal Navy are hard at work, producing, indeed, unequal results on this hand and on that, but nevertheless steadily advancing to the proposed end. We have spoken more than once of preventible causes which have not always received the enlightened attention they should, yet, truth compels us to add, when all is said and done, that the most preventible of all causes is one that lies within the responsibility of the men themselves. Much may be done by Act of Parliament, but no Act of Parliament can save them from the consequences of their own reckless folly."

SOCIETIES—MEETINGS, ETC.

ROYAL GEOGRAPHICAL SOCIETY.—SESSION 1871-2.—November 27th, —Major-General Sir H. C. RAWLINSON, President, in the Chair.

The President read a letter from Dr. Kirk, of Zanzibar, to the late Sir Roderick Murchison, giving news of a serious outbreak in Unyanyembe, the country lying on the main route to Lake Tanganyika, which is likely to prevent communication with Dr. Livingstone for some time to come. The letter was dated September 25th, and stated that a native chief, having been attacked by a force of Arabs settled in Unyanyembe, had waited his assailants in ambush when returning with their plunder, and had killed many of the principal men. Mr. Stanley, an American gentleman, who was travelling to Lake Tanganyika, and who had charge of letters and stores for Dr. Livingstone, was in the fray, and had been deserted by the Arabs. He had also been ill of fever, and his future plans were uncertain. A report, to which Dr. Kirk attached little credence, had spread in Zanzibar to the effect that Livingstone and the Arab Mohammed bin Gharib, with whom he had been living, were returning round the south end of Tanganyika, and out of the region of the disturbances.

Captain R. F. Burton, in commenting upon this letter, informed the meeting that similar affrays between Arab trading parties and the natives had occurred before, and that this unsettled state might continue for two or three years. He thought that Livingstone would find no difficulty in returning by the south of the lake, and that a fearless man like him, speaking the native languages, would be able to pass through the disturbed districts. He had not the slightest misgiving with regard to him.

Captain Burton then read a paper on "The Volcanic Region East of Damascus and the Cave of Umm Nírán." This was a narrative of a hazardous journey of fifteen days, which he had performed in May and June, 1871, in company with Mr. C. F. Tyrwhitt Drake, through the Safá Region, the Oriental *Trachon* of the Greek Geographers, a wide extent of ancient lava-fields, the hills of which, like little pyramids, dot the eastern horizon, as viewed from Damascus. The danger and difficulty of visiting the many interesting places in this district arose simply from certain petty tribes of Bedouin, descendants of the refractory robbers of the Trachonitis, who dwelt in the highlands of the Hauran, under the patronage of the Druses. The worst are the *Ghiyás* and the *Shtáyá*, who, although they have given hostages, were allowed, during the

author's stay at Damascus, to ride the country within three hours of the walls, and to plunder the villages. During one of his excursions a skirmishing party of Ghiyás attacked his party, severely wounding one of his companions. During his journey 120 inscriptions were collected, including three in the Palmyrene dialect. The volcanic outbreak to which the district owes its singular character the author was inclined to attribute to the epoch when the Eastern Desert, a flat stoneless tract, extending from the Trachonitis to the Euphrates, was a mighty inlet of the Indian Ocean, having its northern limit in the range of limestones and sandstones, the furthest outliers of the Anti-Libanus, upon whose southern and eastern feet Palmyra is built, and which runs eastward to the actual valley of the great river. Mr. Drake took a continuous set of compass bearings during the journey, which had enabled him to draw an excellent map of the region.

Mr. W. Gifford Palgrave spoke on the subject of the paper, stating that Captain Burton was the only European who had properly explored El Safá. He had himself explored about two-thirds of the distance, without, however, reaching the cavern of Umm Nirán. His own visit terminated at the southern part of the *El Leja*, the great volcanic district celebrated for the destruction of the Egyptian army in the time of Ibrahim Pacha, when they attacked the Druses in their basaltic labyrinth.

A second paper was read, on "The Geography of Southern Arabia," by the Baron Von Maltzan, which contained interesting elucidations of the physical configuration and tribal distribution of the region north of Aden, compiled by systematic interrogation of Arabs at Aden.

December 11th.—Major-Gen. Sir H. C. RAWLINSON, in the Chair.

The President, in opening the proceedings, said that at a time of such extraordinary tension of the public mind, when a telegram arriving at any moment might plunge the Society, in common with the whole nation, into profound grief, it had been a matter of consideration with himself and the Council whether the Meeting announced for the evening should not be postponed; but it had finally appeared to them that it was not inconsistent with feelings of the warmest affection for the illustrious sufferer at Sandringham and his Royal relatives that the Society should pass an hour in discussing the subject of the Equatorial Lakes of Africa, in which the Prince of Wales, their Vice-Patron, had always taken a warm personal interest. With regard to Dr. Livingstone, he stated, that the efforts made for some time past to communicate with the great traveller

having failed to yield definite direct news from Livingstone himself, the Council of the Society had felt it their duty to suggest to the Foreign Office the adoption of other means of reaching him in the far-distant country of Manyema, where he was supposed to be. This might be done either by sending native messengers separately by different routes, their rewards to be contingent on their bringing back letters from Livingstone, or by the despatch of a qualified European with a party of natives; but further decision would depend upon the result of their communication with the Foreign Office.—A paper was read by Mr. Keith Johnston, on “The Rev. Thomas Wakefield’s Map of Eastern Africa;” the subject being limited to the form of Speke’s Lake Victoria Nyanza, which Wakefield’s native travellers had decided to consist of at least two lakes.—Captain R. F. Burton followed with a paper on “Lake Ukara or Ukarewe,” in which he argued from the new information gleaned by Mr. Wakefield at Mombaz, and Captain Speke’s own data, that Victoria Nyanza consisted of many separate lakes, and that it was a “Lake Region,” and not a single lake.

NOTICES OF BOOKS.

WE have received the “Tide Tables for the British and Irish Ports for 1872, etc.,” published by the Admiralty, and they appear to be as carefully compiled as in previous years. The various other particulars published in the work will be found of much value, and the names attached to them sufficiently guarantee their reliability. We observe that in this edition the formula for calculating the tides is given, which is certainly a useful addition. The work is sold by Mr. Potter, of the Poultry.

“The Mercantile Navy List and Maritime Directory for 1872,” has been sent to us and fully maintains the high character the previous issues have attained for usefulness and reliability. We notice that in addition to the information hitherto published concerning steam-vessels, the details of the rig, and date and place of build of all registered British sailing vessels are given, which are really valuable addenda to the work. The names of Mr. J. J. Mayo, as the compiler, and Sir William Mitchell, as the publisher, should recommend the publication to all nautical men, as a most useful compendium of information concerning our great Mercantile Navy.

We have also received Mr. Leighton Jordan’s “Remarks on Recent Oceanic Explorations, etc.,” and hope to notice it in our next.

MONTHLY ABSTRACT OF NAUTICAL NOTICES.

No.	PLACE.	SUBJECT.
1	ENGLISH CHANNEL.—Entrance—Seven Stones Light-vessel.	Establishment of Fog Signal.
2	THAMES RIVER ENTRANCE—Alexandra Channel	Temporary Buoy.
3	ENGLAND—East Coast—Yarmouth Roads—St. Nicholas Light-vessel.	Alteration in Light.
4	DENMARK—Jutland—Skagen Lighthouses.	Ice Signals, etc., page 54.
5	JAVA—Madura Strait—Zwantyes or Koko Reef.	Establishment of a Light.
6	JAPAN—Hakodadi.	Establishment of a Light-vessel.
7	CALIFORNIA—Trinidad Head.	Establishment of a Light.
8	NEWFOUNDLAND—Belleisle Strait—Cape Norman	Establishment of a Light.
9	" West Coast—Point Rich.	Establishment of a Light.
10	GULF OF ST. LAWRENCE—North Coast—Egg Island.	Establishment of a Light.
11	LAKE ONTARIO—Wicked Point.	Establishment of a Light.
12	ST. LAWRENCE RIVER—St. Roque Shoal.	Establishment of a Light-vessel.
13	UNITED STATES—Maine—Portland Head Light-house.	Fog Signal.
14	" Massachussets—Boston Head Lighthouse.	Fog Signal.
15	FRANCE—West Coast—Pierres Noires.	Establishment of a Light.
16	" " Port de Gullfinec.	Establishment of Lights.
17	SOUTH AMERICA—Dutch and French Guyana—Maroni River.	Establishment of Lights.
18	GULF OF ST. LAWRENCE—Miramichi Bay.	Leading Lights.
19	SWEDEN—Kattegat—Warberg Skrifvereklppen.	Exhibition of Light.
20	DENMARK—The Sound—Hveen Island.	Exhibition of Light.
21	NORWAY—Christiania Fiord—Digerhovedet.	Establishment of a Light.
22	CEYLON—Point de Galle.	Position of a wreck.
23	MEDITERRANEAN—Italy—Torre del' Annunziata	Establishment of a Light.
24	" " Giannutri Island.	Establishment of a Light
25	UNITED STATES—Connecticut—Bridgeport	Alteration in Light.
26	" New York—Long Island—Long Beach Bar.	Establishment of a Light.
27	" Mississippi Sound—Cat Island	Establishment of a Light.
28	" Maine—Cape Elizabeth.	Alteration in Fog Signal.
29	JAPAN—Nipon—Iro-o-saki (Cape Idsa).	Establishment of a Light.

NAUTICAL NOTICES.

(All Bearings are Magnetic.)

1.—ENGLISH CHANNEL.—*Seven Stones Light-Vessel*.—A powerful fog horn has been placed on board; in thick or foggy weather blasts will be emitted at intervals of *ten seconds*, and distributed to all points of the compass.

2.—THAMES ENTRANCE.—*Alexandra Channel*.—In consequence of a spit having grown up about one and a half cables outside the line of the S.W. Shingles and West Shingles buoys, in the Alexandra Channel, a *red can* buoy has been temporarily placed to mark the edge.

The buoy lies in $4\frac{1}{2}$ fathoms at low water springs with the following marks and bearings, viz. :—

S.W. Shingles buoy	-	-	-	E. $\frac{3}{4}$ S.
West Shingles buoy	-	-	-	N.W.
Girdler beacon	-	-	-	S.W. $\frac{1}{2}$ S.

3.—ENGLAND.—*Yarmouth Roads*.—*St. Nicholas Light-Vessel*.—The low light has been changed to a *red* light, flashing *every ten seconds*.

4.—DENMARK.—*Skagen Lighthouses*, Ico signals, see page 54.

5.—JAVA.—*Madura Strait*.—*Zwantyes or Koko Reef*.—A revolving white light showing a *fixed* light for *one and a half minutes*, followed by an *eclipse of ten seconds*, a *flash of ten seconds*, and a *second eclipse of ten seconds* (together *two minutes*) is in course of preparation; it will be elevated 54 feet above the sea and should be seen 12 to 14 miles. Position, lat. $7^{\circ} 28' S.$, long. $113^{\circ} 7' E.$ In foggy weather or if any interruption of the regular working of the light should occur, a bell will be sounded.

6.—JAPAN.—*Yezo*.—*Hakodadi*.—A light-vessel has been placed in $7\frac{1}{2}$ fathoms at low water springs, off the northernmost point of the spit which runs out from point Anama (the north-western point of the town), with the mouth of Kamida Creek bearing, E. by S. $\frac{1}{2}$ S., and White Bluff, S. by E.; she is painted red, has two masts, and carries a red ball at the foremost head.

The light is a *fixed white* light 36 feet above the sea and should be seen in clear weather 10 miles. The light-vessel formerly moored in the harbour has been removed.

NOTE.—It is advisable for vessels of large draught to go north of the light-vessel, as there is a bank of stones directly south of her.

7.—CALIFORNIA.—*Trinidad Head*.—A *flashing red* light of the fourth order has been established, showing a *red flash of five seconds*, a partial eclipse of *five seconds*, a total eclipse of *forty-five seconds*, and a partial

eclipse of *five seconds*, the time from one red to another being *one minute*. It is elevated 195 feet above the sea and should be seen 10 miles. The tower is white and is in lat. 41° 3' N., long. 124° 8' W.

8.—NEWFOUNDLAND.—*Belle Isle Strait*.—*Cape Norman*.—A revolving white light has been established, showing a *flash every two minutes*, elevated 138 feet and should be seen 20 miles. The tower is white. Position, lat. 51° 38' N., long. 55° 54' W.

9.—NEWFOUNDLAND.—*West Coast*.—*Point Rich*.—A flashing white light showing a *flash every fifteen seconds* has been established, it is elevated 130 feet and should be seen 18 miles. The tower is white and in lat. 50° 42' N., long. 57° 24' W.

10.—GULF OF ST. LAWRENCE.—*North Coast*.—*Egg Island*.—A revolving white light showing a *flash every minute and a half* has been established, it is elevated 70 feet and should be seen 15 miles.

The tower is 30 feet high and surmounts the keeper's dwelling. Position, lat. 49° 38' N., long. 67° 10' W.

11.—LAKE ONTARIO.—*Wicked Point*.—A fixed red light is established, it is elevated 40 feet and should be seen 10 miles.

The tower is square, painted white, and surmounting the keeper's dwelling. Position, lat. 43° 52' N., long. 77° 14' W.

12.—ST. LAWRENCE RIVER.—*St. Roque Shoal*.—A light-vessel has been placed on the north-western edge of this shoal, she exhibits *two white lights* from different masts, one 16 feet, the other 24 feet, above the deck, and they should be seen 6 miles.

The vessel is moored in 3½ fathoms at low water springs, and 2½ miles from the old light-vessel. Position, as given, lat. 47° 22' 30" N., long. 70° 17' W.

In thick or foggy weather, and snow storms, a bell will be tolled.

NOTE--If from any accident the light-vessel should be out of position, the light on the foremast only will be exhibited, and during the day the ball at the foremast head will be taken down.

13.—UNITED STATES.—*Maine*.—*Portland Head Lighthouse*.—A fog trumpet has been established. During thick or foggy weather, a blast will be sounded of *eight seconds duration*, with intervals between the blasts of *forty seconds*.

14.—UNITED STATES.—*Massachusetts*.—*Boston Lighthouse*.—A fog trumpet has been established in lieu of the bell hitherto used. In thick or foggy weather, a blast will be sounded of *seven seconds duration*, with intervals between the blasts of *forty-three seconds*.

15.—FRANCE.—*West Coast*.—*Pierres Noires*.—On or about the 1st May, 1872, a light of the third order will be exhibited from a lighthouse on the large rock of the Pierres Noires, Coast of Finisterre.

The light will be a *red flashing* light, showing a flash and an eclipse alternately of *ten seconds* duration; it will be elevated 90 feet above the sea, and should be seen 12 miles.

The tower is built of stone, and 82 feet high. Position, lat. $48^{\circ} 18' 40''$ N., long. $4^{\circ} 55' W.$

NOTE.—Mariners are cautioned that the rock on which the lighthouse is built is not the outermost of the group, as rocks extend S.W. nearly 3 cables from the light.

16.—FRANCE.—*West Coast.*—*Guilfinec Harbour.*—Two leading lights for entering the harbour are established on the eastern side of the harbour.

The upper light is a *fixed red* light elevated 50 feet above the sea, visible through an arc of 14 degrees on each side of the centre of the channel, and in the line of the centre of the channel should be seen 9 miles, decreasing to 6 miles to 10 degrees on either side.

The lower light is 620 yards W. by S. $\frac{1}{2}$ S. from the upper light; it is also a *fixed red* light, elevated 19 feet above the sea, and should be seen 6 miles.

17.—DUTCH AND FRENCH GUYANA.—*Maroni River.*—*Fixed white* lights are now exhibited on the points on both sides of the entrance of Maroni river; they are 75 feet above the sea and should be seen 13 miles. The approximate positions are lat. $5^{\circ} 43' N.$, long. $53^{\circ} 58' W.$, and lat. $5^{\circ} 42' 30''$, long. $53^{\circ} 56' 20'' W.$

NOTE.—To enter the Maroni river by day, keep the outer buoy and the Dutch lighthouse on the west side of the entrance in a line, and on reaching the inner buoy steer for Point Panato.

18.—GULF OF ST. LAWRENCE.—*Miramichi Bay.*—Beacon lights are now exhibited in the following positions, viz. :—

Two beacon lights at Hucklebury. The outer or N.W. light, from a building erected for the purpose; the inner light from the east end of a white barn, which, to distinguish it, has a black band painted down the centre of the roof. Both lights are *fixed white* lights. The black band and the outer beacon, by day, leads across the outer bar to the Lump buoy. By night the two lights should be kept in line.

Two *fixed white* lights on Oak point, one situated on the point, the other to the eastward of it. The Narrows buoy lies with the two beacon lights in a line.

A *fixed white* light is shown from each of the beacons to the westward of Malcolm point, in the river.

19.—SWEDEN.—*Kattogat.*—*Skrifvereklippen.*—The light is now exhibited on this rock at the entrance of Warberg harbour. The light is an *alternating red* and *white* light. Position, lat. $57^{\circ} 6' N.$, long. $12^{\circ} 13' E.$

20.—DENMARK.—*The Sound.*—*Hveen Island.*—The light, a *flashing white* light with short eclipses, is now exhibited on the north-west point of the island in lat. $55^{\circ} 55' N.$, long. $12^{\circ} 40' E.$

21.—NORWAY.—*Christiania Fiord*.—*Digerhovedet*.—A light has been established on this point on the east side of the fiord. The light is a *fixed red and white* light, visible from the bearing S.S.E. round by east to N. $\frac{1}{4}$ W. It is *red* between N. $\frac{1}{4}$ E. to N.E. $\frac{1}{4}$ E., and the remainder *white*. Position, lat. $59^{\circ} 43' 30''$ N., long. $10^{\circ} 35' 45''$ E.

The light will be exhibited from the 15th July in one year to the 15th May in the next, except during the winter season.

NOTE.—Vessels drawing not more than 11 feet water can pass close to the westward of the lighthouse, but those of greater draught should not approach within half a cable.

22.—CEYLON.—*Point de Galle*.—The wreck of the steamship *Rangoon* now lies in 15 fathoms water, S.W. $\frac{1}{4}$ W., one and a half miles from the lighthouse on Point de Galle. As the vessel is built of iron it is likely to last for some time, and while her masts stand, to be an obstruction to navigation.

23.—MEDITERRANEAN.—*Italy*.—*Torre del' Annunziata*.—A red light suspended from a mast is exhibited from the extremity of the West Mole, 33 ft. above the sea, and should be seen 2 miles. Position, lat. $40^{\circ} 45'$ N., long. $14^{\circ} 27'$ E.

24.—MEDITERRANEAN.—*Italy*.—*Giannutri Island*.—A *fixed red* light, 312 ft. above the sea, is exhibited from the southern hillock of the island, and should be seen 10 miles. Position, lat. $42^{\circ} 14\frac{1}{2}'$ N., long. $11^{\circ} 6'$ E.

25.—UNITED STATES.—*Connecticut*.—*Bridgeport Harbour*.—The lighthouse has been rebuilt, 83 yards to the southward of the old site, at the entrance of the harbour. The light, as before, is a *fixed red* light, of the fourth order, elevated 56 feet above the sea, and should be seen 13 miles. The tower is painted white. In thick or foggy weather, a bell will be struck by machinery at intervals of *fifteen seconds*.

NOTE.—The lighthouse must be passed to the eastward.

26.—UNITED STATES.—*Long Island*.—*Gardiner Bay*.—A *fixed red* light of the fifth order is now exhibited from a screw pile lighthouse on Long Beach Bar, entrance to Orient and Greenport Harbours, Gardiner Bay. The light is elevated 56 feet above the sea, and should be seen 13 miles. The tower stands in 5 feet water, is painted white, and the piles red. Position, lat. $41^{\circ} 6' 20''$ N., long. $72^{\circ} 17' 50''$ W. In thick or foggy weather, a bell will be struck by machinery at intervals of *fifteen seconds*.

27.—UNITED STATES.—*Mississippi Sound*.—*Cat Island*.—A fifth order *fixed and flashing* light, showing a flash *every minute and a half*, is now exhibited from a screw pile lighthouse on the west end, in lat. $30^{\circ} 14'$ N., long. $89^{\circ} 8' 45''$ W., it is elevated 45 feet, and should be seen 11 miles.

28.—UNITED STATES.—*Maine*.—*Cape Elizabeth*.—The following alteration has been made in the fog signal, viz. :—The steam whistle will give

two blasts of *five seconds'* duration each, with an interval of *eight seconds* between them, followed by a pause of *forty-two seconds*, in each minute.

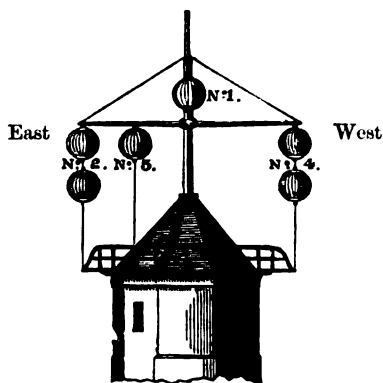
29.—JAPAN.—*Nipon*.—*Iro-o-saki (Cape Idsa)*.—A *fixed red light* of the sixth order, elevated 185 feet above the sea, has been established; it should be seen 8 miles. Position, lat. 34° 36' N., long. 138° 51' E.

SIGNALS AT THE SKAGEN LIGHTHOUSES.

(NOTICE No. 4.)

THE Danish Government has given notice, that in order to indicate that one or more of the light-vessels in the Kattegat, either from the state of the ice, or from some other reason, have left their stations, the following signals will be shown during the time the vessel is away from her station :—

By Day.—On a mast, with a yard attached and raised on the top of the old lighthouse of Skagen, which stands nearly a mile W. by S. from the new lighthouse.



The old lighthouse of Skagen, seen from the North.

1. A ball on the mast above the yard, when the Trundelen light-vessel is not in her station.
2. Two balls at the eastern yard arm when the Kobberground light-vessel is not in her station.
3. A ball at the quarter of the eastern yard when the Knoblen light-vessel is not in her station.

4. Two balls at the western yard arm when the Læso channel light-vessel is not in her station.

Also, from the 1st January, 1872 :—

By Night from an auxiliary light station on the northern side of the *new* lighthouse of Skagen, and 62 feet above the level of the sea, there will be exhibited :—

1. A *red* light when the Læso channel light-vessel is not in her station.

2. A *green* light when the Trundelen light-vessel is not in her station.

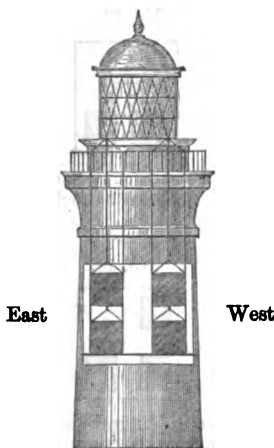
3. A *white* light when the Læso channel light-vessel and the Trundelen light-vessel are not in their stations.

The white auxiliary light should be seen in clear weather about 9 miles, and the coloured lights about 5 miles, in a northerly direction, and decreasing on both sides to about 60°.

ICE SIGNALS.

WHEN the state of the ice at the stations of Vinga-Skaergaard, Elsinore, Sæby, and of Frederikshavn is such as to impede the navigation at those stations, the following signals will be shown, by means of black tables, hung out beneath the gallery on the white painted surface on the northern side of the new lighthouse of Skagen :—

Signal apparatus upon the lighthouse of Skagen.



The new lighthouse of Skagen, seen from the North.

No. 1.



Ice in Vinga-Skaergaard preventing the navigation.

No. 2.



Ice at Elsinore, prevents entering the harbour.

No. 3.



Ice at Frederikshavn prevents entering the harbour.

No. 4.



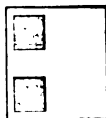
Ice in Læso channel preventing the navigation.

No. 5.



Ice in Vinga-Skaergaard, at Elsinore, at Frederikshavn, and in Læso channel.

No. 6.



Ice in Vinga Skaergaard and at Elsinore.

No. 7.



Ice in Vinga-Skaergaard and at Frederikshavn.

No. 8.



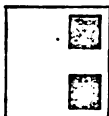
Ice in Vinga-Skaergaard and in Læso channel.

No. 9.



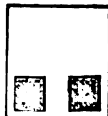
Ice at Elsinore and at Frederikshavn.

No. 10.



Ice at Frederikshavn and in Læso channel.

No. 11.



Ice at Elsinore and in Læso channel.

No. 12.



Ice in Vinga-Skaergaard at Elsinore and at Frederikshavn.

No. 13.



Ice in Vinga-Skaergaard at Frederikshavn and in Læso channel.

No. 14.



Ice in Vinga-Skaergaard at Elsinore and in Læso channel.

No. 15.



Ice at Elsinore, at Frederikshavn, and in Læso channel.

NOTE.—In order to form a correct knowledge of the state of the ice in the Kattegat, the ball signals ought always to be compared with the table signals. When therefore the signals from the old lighthouse of Skagen indicate that the light-vessels have left their stations, it may be expected to meet ice whether the tables are shown or not.

When the auxiliary light shows a white or a green light, and consequently indicates thereby that in both cases the Trundelen light-vessel has left her station, there will be a probability that the light-vessel of Kobberground has also been removed, the general rule being that this light-vessel is taken away earlier than the former. In this case the Knoben light-vessel will probably have been removed from her station, and the auxiliary light on the lighthouse of Anholt will then be shown.

Further information concerning the state of the ice and of the light-vessels in the Kattegat may be obtained by exchanging signals with the semaphore at Skagen.

HYDROGRAPHIC.

APPROACHES TO THE DEMERARA RIVER.

The following directions for the approaches to the Demerara River, resulting from a recent survey of the outlying bank of soundings and of the adjacent coasts, have been received from Navigating Lieut. George Stanley, 1871.

Directions.—Vessels bound for Demerara river should be careful in the determination of their position in the meridian of 58° W. when in about latitude 8° N.: the soundings then are between 30 and 35 fathoms brown sand, or sand and shells. Taking this as a point of departure a S.S.E. or S. by E. course for 50 miles will pass over a bottom of fine dark sand. The depth in $7^{\circ} 50'$ N., after suddenly shoaling to 11 and 12 fathoms, will again gradually deepen to fourteen fathoms; when the fine dark sand is passed and the light-vessel moored off Demerara River neared, the water will gradually shoal with a soft muddy bottom.* Should the lead give

* The light-vessel lies N.E. by N. about $8\frac{1}{2}$ miles from the entrance of the river in 3 fathoms, and exhibits a *flood* white light, which in clear weather may be seen 10 miles. The vessel is painted red, has one mast, and carries during the day time a large blue broad pendant. The pilots reside on board.

5 and $5\frac{1}{2}$ fathoms, with neither light-vessel nor land visible, the ship will have been set to the westward, and should immediately haul eastward and obtain deeper water.

In any position, should it fall calm, it is advisable to anchor when the depth will admit, as a set of twenty-four hours of the prevailing current will make it difficult for a vessel to reach the light-vessel.

Outer Banks.—In $7^{\circ} 55' N.$ and $58^{\circ} 22' W.$ is the commencement of a 10-fathom bank, of hard sand with black specks; it extends in an E.S.E. direction a distance of 30 miles with but little variation in depth; north of the bank the water suddenly deepens to 20 and 25 fathoms.

Vessels steering a S.S.E. course from about $8^{\circ} N.$ and obtaining muddy bottom when in the parallel of $7^{\circ} 40' N.$, will be too far to the westward. As a rule the nature of the bottom when making Demerara river from the northward should be fine dark sand.

The south-west elbow of a large and extensive tract of soundings on a sandy bottom will be found in latitude $7^{\circ} 10' S.$ and longitude $58^{\circ} W.$; this line of sand is well marked and stretches N.N.W., a distance of 40 miles from the above position, whence it takes a W.N.W. direction. To the eastward of the elbow, it has been traced for a distance of 20 miles. West and south of this edge, the bottom is mud.

The land east and west of George Town is extremely low and flat, the Kurida trees, which fringe the shores of this extensive line of coast, are invariably of the same height, and the several chimneys of the sugar estates of Demerara are of the same shape and character. The seaman in making Demerara light-vessel has therefore no natural or artificial features to guide him, and the lead, latitude, and longitude are alone to be depended on.

E. by N. $5\frac{1}{2}$ miles from the lighthouse at the entrance of Demerara River is a low grassy point; off this point in a north-east direction is the Lusignan spit with only 6 feet on it at the distance of 3 miles from the land; from the grassy point the coast line trends in a S.E. by E. direction 9 miles, and at low water is faced by a mud flat extending off shore to a distance of between a half and three quarters of a mile.

Vessels approaching Demerara River from the south-east should therefore be careful to avoid the Lusignan spit; the light-vessel kept on a West bearing is the best guide until she is close to, when the river can be approached as directed in the West India Pilot.

Currents.—Off the coast of Demerara the inner edge of the

current may be traced south as far as $7^{\circ} 10' N.$ in the meridian of $58^{\circ} W.$ During the prevalence of south-easterly winds it was found to attain a velocity of $1\frac{3}{4}$ knots in a north-west direction; with north-easterly winds the direction became more westerly with a force of $1\frac{1}{4}$ miles an hour. In latitude $7^{\circ} 40' N.$ and north of the Essequibo river, the current attained a velocity of 2 miles an hour.

In making Demerara river with a flood tide, allowance should be made, as then the current and tide combine and rapidly sweep a vessel to the westward. During the twelve months of the survey of the approaches to Demerara river, the set on all occasions, either entering or leaving was found to the westward, the ebb or north-easterly tide only lessened, and never overcame the direct westerly set.

Tides.—The ebb and flood streams of the mouths off the Essequibo and Demerara rivers run in a N.E. by N. and S.W. by S. direction, the ebb at springs 15 or 20 miles off the land attaining a velocity of from $2\frac{1}{2}$ to 3 knots, the flood tide from 2 to $2\frac{1}{2}$ knots. Off the east coast of Demerara the tides are felt only a few miles from the land. In $6^{\circ} 50' N.$ and $57^{\circ} 50' W.$, with the land 10 miles distant, no tide or current was felt, the vessel at anchor on every occasion was alone influenced by the wind.

Winds.—The most unsettled and stormy months are December and January; sometimes it blows strong from the north-east, accompanied with hard squalls and rain. During March, April, May, and June, the winds still hold to the north-east, but become gradually lighter; in the latter month and in July the land wind beats back the trade wind, and is accompanied by heavy rain. In August and September the wind veers round to the south-east, heavy rains are less frequent, and calms of several hours' duration often prevail. During these months of light wind it was found that in general the wind veered round to the north-east during the night, backing towards the south-east in the forenoon.

Weather.—The seasons in Demerara are variable; there would appear at the present time to be no fixed period when the long and short rainy seasons commence; formerly they were looked for with certainty, as they came every year within a few days of the same date. During the last two years, December and January have been especially wet months; in 1870, the rainfall in December was 35 inches; in January, 19 inches; during the whole year it amounted to 129 inches.

GENERAL.

ROYAL NATIONAL LIFE-BOAT INSTITUTION.—A meeting of this Institution was held at its house, John-street, Adelphi, on Thursday, 7th December, 1871.

The silver medal of the institution and a copy of its vote inscribed on vellum were voted to Mr. J. Smallridge, coxswain of the Braunton life-boat, together with £13 to himself and the crew of the boat, in testimony of their recent gallant services in saving seven of the crew of the brigantine *Nigretta*, of New York, which had stranded on Braunton Sands.

Rewards amounting to £220 were also voted to the crews of various life-boats of the institution for services rendered during the past month. The Lytham life-boat put off twice to the French brig *Jeune Colombe*, which had gone on the Horse Bank, and was fortunately enabled to save the crew of seven men. The same valuable life-boat was instrumental three days afterwards in bringing ashore the crew of four men from the schooner *Jubilee*, of Preston, which had gone on the Horse Bank in a heavy ground swell. The Moelfre life-boat went off to the Dulas Rocks, during a heavy gale and in a rough sea, and rescued two men belonging to the schooner *Confidence*, of Aberystwith, which vessel had been driven on to the rocks. The Whitehaven life-boat saved the crew of four men belonging to the smack *Demitian Lass*, of the Isle of Skye. The Caister life-boats had put off to the steam-ship *Benjamin Whitworth*, which had got on the Cross Sands. The life-boats remained for some time in her vicinity in readiness to help her crew and the shoremen who had gone on board to render assistance. The Brooke, Isle of Wight, life-boat put off on two occasions, and brought safely ashore the crew, numbering twenty-one men, of the barque *Cassandra*, of Liverpool, which was wrecked in Compton Bay during a gale of wind. The sea was breaking up the cliff at the time, rendering the launching of the life-boat a work of considerable difficulty. The Burnham life-boat put off in tow of a steamer, in reply to signals of distress, and at the request of the mate remained some time alongside the barque *Storm*, of Cardiff, which had gone on the rocks while only five of the crew were on board. The Peterhead life-boat was taken out during the night in a strong gale of wind, and was enabled to save the crew of ten men from the stranded barque *Albion*, of Rostock. The Pembrey life-boat brought the French

schooner *Pierre Desirée*, of St. Valerie, safely to land, the vessel at the time being in a very disabled state, both anchors and sails being gone, and there being seven feet of water in the hold. The Hauxley life-boat was successful, after a long pull through a heavy sea, in saving the crew of eight men from the stranded brig *Osborne*, of Hartlepool.

Various rewards were likewise granted to the crews of shore boats for saving life from wrecks on our coasts.

During the current year £16,836 had been expended by the society in the formation of new life-boat stations, and in the maintenance of its large life-saving fleet, now numbering 231 boats. In the same period the Institution had contributed by its life-boats and other means to the saving of 729 lives from various wrecks, besides rescuing twenty vessels from destruction. During the past three years the life-boats of the Institution have been manned on all occasions, including quarterly exercise, by upwards of 30,000 persons, and not a single life had been lost from them. It is also a remarkable fact, that during the past twenty years the Institution has not lost, from all causes, more than twenty-two persons from its own life-boats.

Various charitable contributions in aid of the funds of the Institution were announced.

Two new life-boats had been sent during the past month to Flamborough Head, and one to Wexford, Ireland.

It was reported that Captain Steengrafe, the inspector of life-boats to the German Life-boat Society, had visited England to see the working of the National Life-boat system, and had expressed himself as much gratified with the efficiency of the life-boat stations visited by him.

EXAMINATION OF MASTERS ORDINARY.—We call the attention of our readers to the notice in our advertising columns of the examination that Masters will have to undergo after the 1st day of March next, in compass deviation. We append to this number of the *Nautical Magazine* a copy of the Board of Trade Circular on the subject.

A SCIENTIFIC EXPEDITION.—We learn that the expedition of Professor Agassiz on the constitution and character of the sea bottom had sailed from Boston in the iron steamer *Hassler*. The scientific party consists of Professor Agassiz, Dr. Thomas Bill, ex-President of Harvard College; Count Pourtales, of the United States Coast Survey; Dr. Steindachner, of Cambridge, and Dr. Jas. William White, of Philadelphia. Accompanying that party was Mr. G. L.

Morse, a son of Sidney E. Morse, who went with the view of superintending the trial of a new apparatus for taking deep sea soundings, invented by himself and father. It operates without use of a line, and consists of a cylindrical body, tipped with a cone, its shape being that of a Congreve rocket. The great desideratum in the use of any machine for taking deep sea soundings is something which shall prevent the drawing in of an immense weight of line. The trouble heretofore has been that the objects which were used to give buoyancy were crushed by the great pressure. These gentlemen have obviated this difficulty by filling the body of the machine with hollow glass spheres, which have been subject to the pressure of five tons to the square inch in the cistern of a hydraulic press. This immense force of a compression represents that which they would encounter at the depth of four or five miles. They have stood it without being either crushed or permeated. At one end of the cylinder is an iron tube, the weight of which causes the machine to float vertically in the water, the conical head rising six or seven feet above the surface. To the machine as above described a heavy weight is attached in such a manner that on striking the bottom it is detached, allowing the instrument to rise to the surface by its buoyant power. The recording instrument, which is called a bathometer, operates upon the principle of the compression of water or other fluid, and the depth is measured by the use of a column of mercury, which is forced over under pressure. It is estimated that soundings can be made by this machine in half an hour, which, by the present methods, occupy five or six hours. The cost of construction is very little, and of working still less.

AMERICAN MARINE.—In Mr. Secretary Boutwell's Report concerning the maritime affairs of the United States, it is stated that "The operations of the Coast Survey, which come under the administrative direction of this Department, have been prosecuted with the usual energy, as will be seen from the brief report of progress made by the Superintendent in advance of the usual detailed reports, with maps, annually submitted to Congress. The survey of the Atlantic coast is now rapidly approaching completion, that of the Gulf Coast is more than half finished, and the work on the Pacific Coast is being pressed forward vigorously. The estimates submitted substantially conform to the appropriations for the present year. An increase is asked for in the item of extending the triangulation across the country to the Pacific Ocean, great interest having been manifested by the authorities of the States traversed in the prosecution of the work."

The following extract from the same report has much significance, as shewing the spirit which animates American politicians—

“In view of the facts of our extensive coasts on the Atlantic and Pacific oceans, and our position with reference to Europe and Asia, the country ought not to be satisfied with any policy which does not look to the establishment and continuance of ship-building in the United States; the encouragement of our own seamen and merchants, and the control of so much, at least, of the commerce of the world as is desired for the export of our own products. The importation of articles required for domestic consumption, the removal of duties upon foreign articles used in the construction of iron steamships, or the allowance of a drawback equal to the amount of duties paid, will not, in the existing condition of things secure the re-establishment of the business, but were it otherwise the removal of duties or the allowance of drawback raises practical questions of great difficulty, while any concession by an indirect process is likely in the end to prove unnecessarily expensive to the country. Several of the existing lines of European steamers were established by the aid of Government subsidies. They are still encouraged by the same means, and it is unreasonable to expect that our merchants and ship-builders can successfully compete with this formidable combination, unless they are supported by the power of their own Government. After careful consideration of the whole subject I am prepared to advise the passage of a law guaranteeing to persons who may employ in the foreign trade American-built first-class iron steamships of not less than 2000 tons burden each, an annual payment, for the period of five years, of the sum of thirteen dollars per ton. The subsidy should be proportionately less to vessels of lower classification. In making this recommendation, I do not assume that there is no other practicable method of restoring our commerce, but I present it as the method which appears to me to be the most efficient and economical. Connected with this plan it will be wise to consider whether the ships may not be so constructed as to be available for naval purposes, and in case of war, subject to the right of the United States to take them upon payment of their appraised value. A similar suggestion was made by the Secretary of the Navy in his report for the year 1869. They should also be required to carry the mails on moderate terms or in consideration of the subsidy. The use of sailing vessels and steamers built of wood may be continued successfully in the coasting trade, the trade with the British possessions and upon the rivers and lakes of the country, but any effort to regain our former position upon the ocean by their agency must

end disastrously. I entertain the opinion that the policy suggested will be effectual, and that in a comparatively short period our mechanics and artisans will acquire equal skill with those of England, and that we shall not only have the aid of the best machinery now in use elsewhere, but that important improvements will be made, calculated to place the country in a position of superiority. We shall also be able to test practically the quality of American iron, which for the purpose of ship-building is represented as better than that used in Great Britain. If it shall appear, as is claimed, that American iron is about ten per cent. better than the iron now used in England, an advantage will be secured not only in the diminished cost of the vessels, but also in the increased tonnage capacity of American ships of equal dimensions over those constructed with inferior materials. Accepting as a truth established by experience, that the ocean commerce of the world is to be carried on in iron steamships, we must consider and decide whether the United States shall disappear from the list of maritime nations, or whether by a determined and practical effort we can regain the position which we occupied previous to the late rebellion.

SIEMENS' DYNAMO-ELECTRIC LIGHT.—Experiments have recently been made at Sheerness to determine whether this light might be successfully used in torpedo warfare; that is to say whether the light could be so projected on to an enemy's working parties as to render them sufficiently conspicuous to be fired at. The trial was made at Garrison Point in the presence of Colonel Nugent, R.E., Colonel Gallwey, R.E., Colonel Hyde, Bengal Engineers, and a number of other Engineer officers interested in the matter. The experiments were conducted by a representative of the firm, Messrs. Siemens Brothers, the inventors of the machine, and were superintended by Lieutenant Anderson, R.E., Secretary to the Torpedo Committee. The engine and "coils" were erected in the enclosure of the fort, while the instrument itself was placed in one of the massive embrasures piercing its sides. No sooner was steam got up and the order given to turn ahead, than the burring noise of the machine indicated that electricity was being rapidly generated, sparks and stars of vivid blue light being given off at the various joints. Another instant, and a vivid stream of light shot across the sea to a number of ships lying in the offing at a distance of about two miles, lighting them up with the brilliancy and distinctness of broad moonlight. The effect was magnificent. Clouds of mist, rendered visible by the intensity of the rays shooting through them rolled across the broad field of bright light from time to time, not,

however, interrupting the view in their progress. By shifting the direction of the rays laterally each object in turn came within the compass of the portion of horizon rendered clear. In fact, it was sufficiently apparent that no objects of any appreciable size, such for instance as an enemy's boats, could come within a mile or more of Siemens' dynamo-electric instruments in operation without being rendered conspicuous to any battery in the vicinity, and consequently not involving to themselves the most imminent danger. The result of the experiments may certainly be pronounced a success.

H.M.S. GLATTON.—The official trial of the double screw armour-plated iron turret ship *Glatton*, Captain Lord John Hay, was made off the Maplin Sands on the 21st December, under the supervision of Captain Luard, with Mr. Murray and other officers of the Steam Reserve at Sheerness. Mr. James Steil, R.N., inspector of machinery, was down from the Admiralty, Whitehall, and there were also on board from Chatham, where the ship was built, Captain Chamberlain, captain superintendent of Chatham dockyard; Mr. Warren, acting master shipwright; and Mr. Eames, superintending engineer.

As now completed the *Glatton* is a warlike machine of the most formidable character for attack or defence; her revolving turret is on the system of the late Captain Coles, and is fitted to carry two 25-ton 12-inch muzzle-loading guns.

The engines are of 500-horse power, made by Messrs. Laird Brothers, Birkenhead; and one of the firm, Mr. William Laird, was on board during the trials, with Mr. R. R. Bevis, their managing engineer.

The engines are similar in general arrangement to those of the *Vanguard*, of 800-horse power, made by the same firm—being horizontal, with return connecting rods, and having jacketed cylinders and surface condensers. The four cylinders are each 60 inches diameter by 2 feet 3 inches stroke; the two screws are four-bladed Griffiths, 14 feet diameter. The number of boilers is five, with sixteen furnaces; 1926 tubes, 5 feet 9 inches long by 2 $\frac{3}{4}$ inches diameter, and a total heating surface of 9500 square feet; condenser surface is 7150 feet. The total weight of machinery and boilers and spare gear is 486 $\frac{1}{2}$ tons.

At the trial the ship was complete with all weight on board, except gunpowder and some stores, but including 30 tons of Nixon's navigation coal, and her draft of water was forward, 18ft. 5in.; aft, 19ft. 5 $\frac{1}{2}$ in.; mean, 18ft. 11 $\frac{1}{2}$ in.

The speed at full power was tested by six runs at the measured mile, which were made as follows:—

Run.	Time occupied.	Speed of ship.
1.	4 min. 38 secs.	12·950 knots.
2.	5 ,, 37 ,,	10·682 ,,
3.	4 ,, 33 ,,	13·187 ,,
4.	5 ,, 14 ,,	11·465 ,,
5.	4 ,, 39 ,,	12·903 ,,
6.	5 ,, 15 ,,	11·429 ,,

Giving a true mean speed to the ship of 12·108 knots, considerably in excess of what was expected. The pressure of steam in engine room was about 27lb., vacuum in condensers $27\frac{1}{2}$ inches, revolutions of starboard engine being $81\frac{1}{2}$, and port engine $82\frac{1}{2}$, mean indicated horse-power about 2900 horse-power, which would have been greater had there not been some trouble from priming caused by the very muddy state of the water stirred up by the storm of the previous day and night.

Speed at half-boiler power was tested by four runs, as follows:—

Run.	Time.	Speed.
1.	5 min. 59 secs.	10·028 knots.
2.	6 ,, 30 ,,	9·917 ,,
3.	6 ,, 12 ,,	9·677 ,,
4.	5 ,, 54 ,,	10·169 ,,

Mean speed being 9·872 knots; pressure of steam being 28lb.; vacuum, 28 inches; and the mean revolutions of starboard engine, $66\frac{1}{2}$, and port, $65\frac{1}{2}$.

During the trial the machinery worked admirably, without any heated bearings or other drawbacks, and the ship was remarkably free from vibration, and steered quickly and with great ease.

TYPHOON AT JAPAN.—The following extract from a letter received from the Commander of H.M.S. *Dwarf* may not be uninteresting to some of our readers. The letter is dated from Hongkong, 3rd of October last.

“ I send you a short description of a typhoon that passed here on September 2nd. On August 31st, the weather was very fine and very hot indeed in the sun. Bar. 29·98. Thor. 84° in the shade. The *Dwarf* went outside among the islands to practise her quarters firing, which we finished by the next forenoon. When it came overcast with bar. 29·82, and falling and a swell from S.E.; in the evening lightning from N.W. and very dirty greasy looking sky. We returned to Hongkong in the afternoon of the 1st. On

the 2nd it began to blow and rain from N.N.E. to N.W. in squalls, very high tides and falling barometer.

2nd September.		Wind.	Bar.	Ther.
9 a.m.	N.N.E. to N.W.	2 to 5 egd.	.. 29·72	81°
Noon.	"	"	.. 29·67	
2 p.m.	North	4 to 7 egdr.	.. 29·59	80°
3 "	"	"	.. 29·54	
4 "	N. to N.N.E.	7 to 9 "	.. 29·45	79°
5 "	"	"	.. 29·43	
6 "	"	8 to 10 "	.. 29·37	78°
7 "	N.E. by N.	9 to 10 qr.	.. 29·32	76°
8 "	N.E.	11 "	.. 29·30	75°
9 "	N.E. by E.	12 "	.. 29·26	72°
10 "	East	12 "	.. 29·20	70°
11 "	East	12 "	.. 29·20	70°
Midnight.	E. by S.	12 "	.. 29·21	70°
3rd September.				
1 a.m.	E. by S.	11 "	.. 29·30	
2 "	E.S.E.	9 to 10 "	.. 29·40	73°
3 "	"	"	.. 29·48	
4 "	S.E.	6 to 9 "	.. 29·56	78°
5 "	"	"	.. 29·60	
6 "	"	4 to 8 "	.. 29·63	
7 "	"	"	.. 29·70	
8 "	"	3 to 5 "	.. 29·74	
10 "	"	"	.. 29·80	

Nearly every ship dragged in this harbour. Several went on shore and were wrecked. Several were dismantled. A great number of Chinese boats were lost, and [many lives. The sea wall was washed down, and much damage done on shore. The centre passed over Macao, where still more damage was done, and great loss of life. Typhoons have been very prevalent in the China seas this year."

THE NORTH GERMAN FLEET.—The German expedition to the Atlantic will be by far the most complete which has ever been fitted out by the Prusso-German Navy. The artillery of the four ships of the expedition will consist of thirty-two 200-pounders (21 centimètre guns), thirty-four 15 centimètre guns, and four 12 centimètre guns. The squadron will thus have 70 guns in all, 32 of which can penetrate an 8-inch armour-plate at 1300 paces, and 34 others a 4 to 5-inch plate at a distance of from 600 to 800 paces. The crews of the four ships will be—the *Crown Prince* and *Frederick*

Charles, 540 men each; the *Elizabeth*, 410; and the *Augusta*, 280. The engine of the *Crown Prince* is of 800 horse-power, that of the *Frederick Charles* 950, and those of the *Elizabeth* and *Augusta* 400 horse-power. The *Frederick Charles*, whose screw was injured in the Belt last year, is again damaged, and will require a good deal of repair before she is fit to put out to sea. The other three ships, however, are said to be in excellent condition, and have the reputation of being the swiftest vessels in the German Navy.

NEW ACT ON MERCHANT SHIPPING.—The Act passed in the late session to amend the Merchant Shipping Acts comes into operation this 1st day of January, 1872. Various provisions in other statutes are repealed, and the Act contains some special provisions on the subject of registration. As to seaworthiness of vessels there are several enactments, and by one it is a misdemeanour to send out a vessel not seaworthy.

LAUNCH OF H.M.S. HYDRA.—H.M.S. *Hydra*, the armour-clad turret-ship constructed by Messrs. J. Elder and Company, was launched from their works at Govan, Glasgow, on 28th December. She is 225 feet long and 35 feet broad, and 2,107 tons burden, and is intended for coast defence, having a shallow draught of water, with a freeboard of only 3 feet 6 inches. The sides are protected by 7-inch armour above and 6-inch below the water line, fitted upon teak varying from 10 to 12 inches thick. The turrets are two in number, constructed of two thicknesses of half-inch plates, and protected by armour plates 10 inches thick. Each turret carries 18-ton guns, firing projectiles weighing 300 pounds, and containing 62 pounds of powder. These turrets can be turned not only by steam-engines, but also by hand, in the event of the former breaking down or being damaged. The *Hydra* will be propelled by twin screws, worked by engines of 250 nominal horse-power.

CHARTS, ETC., PUBLISHED BY THE HYDROGRAPHIC OFFICE, ADMIRALTY,
IN DECEMBER, 1871.

Sold by J. D. POTTER, 31, Poultry, E.C.

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THE
NAUTICAL MAGAZINE.

NEW SERIES.

FEBRUARY, 1872.

RUNNING AWAY AFTER COLLISION.

THE risks voluntarily and cheerfully incurred by sailors in rendering assistance in cases of danger or distress at sea, and the dogged determination and unselfish perseverance with which those services are rendered, have commanded from the earliest ages, and will we trust ever continue to command, universal admiration. So great is the bravery of seamen, and so entirely is that bravery established and accepted, that we not only hear of their acts of daring and heroism with no feelings of surprise and without doubt or question, but we should be inclined to rebuke as a slander any statement or reflection inferring that fear had operated or can operate to prevent a tar from rendering assistance to a human being in distress.

The English novelist and dramatist in depicting noble-hearted and generous seamen, have produced no mere creations of fancy, but, with a few refinements necessary to place them before the eyes of their admirers or critics, have given us reproductions, or representations of men who have lived and moved and had their being in British ships and in English homes.

So general is the feeling that seamen must be brave, that many a long-shore hulking fellow on our coasts, half-sailor, half-loafer, comes in for a share of admiration. And this is not altogether without reason, although many of these fellows do *not* it is to be feared, always endeavour to prevent ships from getting into danger.

Even the wrecker, who in some beer-house ashore, or in the dingy hold of a "salvage" smack, plans methodically the wreck of a ship, is not without some claim to admiration for himself and his fellows, for they not only often incur incredible risk and endure prolonged hardships, exposure, and exertion to bring about a wished for casualty, but will so soon as the casualty is brought about incur still greater risk, and endure hardships, exposure, and toil still more prolonged in saving the wrecked property. That they may have been the means of endangering or perhaps sacrificing the lives of all on board the ship, we fear counts for nothing. There is sometimes an absence of principle, perhaps even a distinguished and powerful presence of villainy in some of these long-shore loafers; but withal there is no imputation that they will flinch from danger, exposure, or fatigue, and almost starvation, to accomplish their ends; nor that they will consider their safety as anything when their lives are weighed against such things as a bale of goods, or a keg of spirits. In the hearts of true sailors as well as in what serves as a heart in the wrecker, there is to be discovered, and we are proud as we write the words, no lack of animal courage. What is true of British seamen is also true of our American cousins, of Danes, Swedes, Norwegians, Germans, Dutchmen, Frenchmen, Italians, Spaniards, and we may even say of the seamen of every maritime state. The quality of pluck varies, or shews itself in different ways in the sailors of different nations, but the pluck is there. This being so, we have been led to wonder how it comes to be reported, as it sometimes does, that a ship after having been in collision with another ship, and having caused damage, sails away without staying to inquire whether assistance is required. What makes this the more incomprehensible is, that in addition to the established bravery and kindness of seamen, there is a certain freemasonry among them, an *esprit de corps*, which prompts them and even compels them in most cases to regard their own lives as nothing when another life may be saved. How is it that this right feeling is so often alleged to be of no effect in the most sudden of all calamities at sea, a serious collision? How is it that it has been so often stated that not only is service sometimes not rendered in such a case, but that a ship comparatively uninjured—or at all events not sufficiently injured to prevent her master, and officers, and crew from rendering assistance to human beings struggling in the water—sails away, without any regard to the struggling sufferers?

It will be well first to consider for a moment who is responsible if such cruelly outrageous abandonment should happen. The crew, that is to say the seamen, apprentices, and others of their class, are not

responsible, for they have no power to order the engines to be slowed, the sails to be put aback, the boats to be lowered, or the course of the ship altered. It is clearly not the crew who are responsible, and it is satisfactory to be able to acquit the body of our seamen from this charge of inhumanity. The look-out man, if there be any, and the helmsman may, by a failure of duty, have contributed to bring about the casualty; but by no failure of duty can they be responsible for not stopping their own ship and not standing by the other. The responsibility would undoubtedly rest on the master and officers of the ship in the first place, and in some cases it has been suggested may perhaps rest on the owner. Every one knows why one ship in case of collision should stand by the other, but few can understand why she should not.

It often happens that an owner engages a master to make a quick passage, and in the desire to make a passage, it has been stated, that the master and officers of a ship may possibly over-look their duties to humanity. It has also been suggested that the desire to get out of the way without being recognized in order to escape legal consequences, prompts the master of a ship to make off; but if so the feeling that prompts him in such a case is just the feeling that prompts a thief to shew his heels. We do not believe any of the mean imputations hinted at above, nor do we concur in the suggestion made by a contemporary, that an owner acting on the principle that dead men tell no tales, may be so unscrupulous as to actually instruct his captains not to remain by in cases of collision. We have now noticed the lowest and meanest motives that have from time to time been suggested for running away after collision. We do not include the cases in which it has been legally proved that an officer in command of the deck of a ship has wilfully run down another ship, and knowing this has sailed on without rendering assistance; such an act can only be the result of mental disease.

There is yet another reason why a ship may sail away without rendering assistance in case of collision, and this we think is the most satisfactory of all reasons, and may relieve us of much anxiety as to the alleged want of humanity on the part of masters and officers in these cases. With a knowledge of the particulars of most of the serious collisions that have happened of late years, we are enabled to state our belief that when one ship has sailed away without rendering assistance to the other, her masters, officers, and crew believed, and believed with an apparent-show of reason, that the master, crew, and passengers of the other ship did not require assistance. It is a remarkable fact that in almost every case in which life has been lost by one of two ships sailing away, and this

in the belief that assistance was not required by the other ship, the master and officers of the ship who sailed away have been noted for humanity and professional ability, and that they have been more pained than any one else on learning subsequently that they left the scene of the disaster when they ought to have remained, and when by remaining they might have afforded such succour to their fellow men as might have saved them from a prolonged and painful struggle with the agonies of death by drowning.

We could give "modern instances" of the facts we have mentioned, but for obvious reasons we abstain from doing so. Officers of the merchant service who would do anything and undergo anything rather than fail in their duties to humanity, may perhaps learn something from these pages, for they will discover to what extent their motives for the abandonment of a ship are liable to misconstruction by persons who do not know the difficulties of putting about in a partially disabled ship after collision, or how small a shock is often felt by a ship which inflicts damage on another; and they will further see from the following lines what the law requires of them.

The Merchant Shipping Act of 1862 requires, that in cases of collision the master or officer in charge of the deck of each vessel shall give to the other vessel the name of his own vessel and certain other particulars. This enactment requires each ship to communicate with the other. It should therefore be borne in mind, that no ship is on any pretext whatever, to sail away from another after a collision. The section itself is as follows:—

9. "In every case of collision between two vessels it shall be the duty of the master of each vessel to give to the master 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 or places from which and to which she is bound.

"Any failure to give such information, except under circumstances which render it impossible or unnecessary to do so (proof of which shall lie on the master failing to give it), shall involve the same consequences as failure to render assistance to the other vessel, or to the master, crew, or passengers thereof.

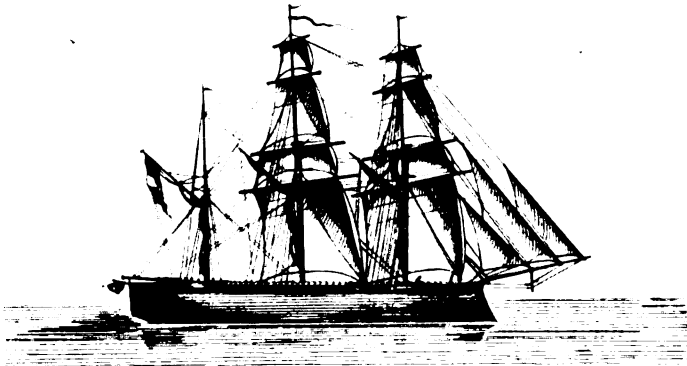
"In this section the term 'vessel' includes any vessel used in navigation, however propelled."

The consequences of not standing by in cases of collision, are as follows:—

27. "All owners and masters of ships shall be bound to take notice of all such regulations as aforesaid, and shall, so long as the same continue in force, be bound to obey them, and to carry and exhibit no other lights and to use no other fog signals than such as are required by the said regulations; and in case of wilful default, the master, or the owner of the ship if it appear that he was in

RIG FOR HEAVY SHIPS.

ADMIRAL C. F. SCHOMBERG.



Under Sail.

Fig. 1.

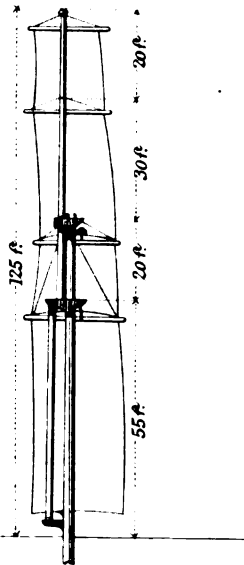


Fig. 2.



Fig. 3.



Struck for Battle.

On end.

Fig. 1. *Top mast & yards up, sail set, with yards nearly square.*

Fig. 2. *Top mast struck & lower top sail & course set with yards nearly square.*

Fig. 3. *Plan of Trussel trees... Enlarged scale.*

such fault, shall, for each occasion upon which such regulations are infringed, be deemed to be guilty of a misdemeanor."

28. "In case any damage to person or property arises from the non-observance by any ship of any regulation made by or in pursuance of this act, such damage shall be deemed to have been occasioned by the wilful default of the person in charge of the deck of such ship at the time, unless it is shown to the satisfaction of the court that the circumstances of the case made a departure from the regulation necessary."

29. "If in any case of collision it appears to the court before which the case is tried that such collision was occasioned by the non-observance of any regulation made by or in pursuance of this act, 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 a departure from the regulation necessary."

No further comment on this subject is now requisite, for these extracts speak for themselves.

THE RIG OF HEAVY SHIPS.

By REAR-ADMIRAL SCHOMBERG.

So much do men-of-war of the present day vary in form, and in almost every point from our ships of former times, that it is fair and reasonable to consider whether a readjustment aloft might not be adopted with advantage.

It has been found necessary to raise the weights considerably in the new type of ship, both in turret and broadside ships, in order to fight the guns and protect the battery. This added to the immense thickness of the armour so placed, must cause ships to be tender under sail, and consequently would appear to call for a reduction in the masting of the ships. Moreover, it has been proved on the several trials of sailing, as described in the *Times*, that the sailing power of these heavily clad ships is but indifferent.

The placing of large quantities of ballast in such ships to enable them to carry heavy masts, which must greatly impede their progress to windward, and which we know must injure their power as steam ships, appears to be inconsistent with the advances we are making in other respects. A rig is desired better suited to such a class of ship and more resembling the rig of our paddle wheel steamers, which has been a great success. We must now acknowledge (what is a fact, whether we acknowledge it or do not) that in these heavy

ships, sailing power must be auxiliary to steam power, and not steam auxiliary to sailing. We undoubtedly have heavy ships that would be better without any masts at all, but they are for especial purposes, such as inshore work, and home defence, or to rendezvous at any part of the coast when required. But in cruising ships that can save coals on a voyage, that can remain off a port to watch an enemy, sail power is indispensable. To effect the improvement that appears so desirable in the rig of heavy ships, it will be necessary to provide a lower mast with a long mast head, utilizing the mast from the deck to the cap by setting on it a course, and a topsail. This fitting is general in ships of all the merchant navies of the world. A pole topmast should then be fitted abaft all, which by a cutting of the top, to let it clear when below the cap, will enable the topmast to be within a few feet the length of the lower mast from the deck upwards. We should thus have a moderate topsail with a small top gallant sail.

In clearing for battle, or preparing for bad weather, the upper yards would be sent down and the topmast struck, so that there would be nothing above the lower mast, although the means of setting a topsail and course would be still provided.

In plain language, the topmast is quite independent of the lower mast, the ship can cruise with or without it, and send it up and down while she is under sail.

The dimensions are entirely under the command of the builder and designer. Before closing these few remarks, it is well to observe that this arrangement is by no means advisable for ships that require full sail power, such as a flying squadron; but it is strongly recommended for ships that should be essentially steam ships. The illustration in the frontispiece will convey an idea of the method proposed, and the details of the fittings follow.

Lower mast iron.—Moderate in length. Long mast head.

Lower yards.—As fitted at present.

Lower topsail yard.—Fixed beneath the cap, so arranged that the topsail and course can be carried, without a topmast.

The top.—To be reduced in breadth and weight.

Trussel trees.—Strong for the support of the top, topmast, fid, etc.

The caps.—As now fitted with the addition of the strong lugbolts on the upper part, for topsail lifts, etc.

Fore caps.—Lugbolts for inner jib stay; halyards: set to bowsprit cap in lieu of fore topmast staysail now in use.

Pole topmast and top gallant mast in one.—Length determined by lower mast. The head to be one foot below the cap. The heel not less than one foot six inches clear of the deck. To be fided abaft all. The top to be cut, to permit the mast to be free when clear of the cap. Opening in top to hinge; after cross tree in halves.

One light cross tree fitted to the funnel, also lugbolts on hoop beneath funnel.—The rigging on a funnel fitted as top gallant rigging; set up with tackles (for overhauling lee rigging in light weather for bracing up).

Upper topsail yard.—Light as can be with safety. Topsail ditto, fitted with two reefs. Lifts and braces, fitted with clasp hooks. The yard to be sent up and down; sail bent, as a top gallant yard. Sail tackle fitted for the purpose as in paddle wheel steam ships of old.

Topsail tye.—Rove on the bight, to hoist on both ends. Tye block to unpin on sending the yard down. No unreeving tyes.

Top gallant mast and yard.—As usually rigged and fitted. To be fitted abaft, heel resting on a chock on the deck. Head bolted through the top for the topmast to work freely, between it and the

Trysail mast.—Lower mast in fidding and striking. When shifting the topmast, this trysail mast must be unstepped.

Studding sails.—Boom irons fitted to ship and unship. Home station not required. Foreign service. Lower studding sails as now in use. Topmast studding sails—jib cut heads to set from the upper topsail yards cut as spinakers.

Stay sails.—To be carried in every available space.

The advantage of this fitting as compared with present rig.—When preparing for battle or ramming you are struck down to the lower masts in a few minutes; with the power of setting a topsail and course. You save the present heavy topmast, with all its fouling gear for the screw. You can carry a topsail and course, independent of your topmast, while fidding or striking masts.

The disadvantages.—You lose half a topsail on each mast. Your lower topsail yard is not very easily sent up and down.

ANCIENT GALLEYS AND THEIR MODE OF PROPULSION.

BY W. S. LINDSAY.

Late M.P. for the Tynemouth Burghs.

[We have very great satisfaction in laying before our readers a paper by an old and valued member of the shipping community. Mr. Lindsay's person, and Mr. Lindsay's voice will be fresh in the memory of those who were in Parliament, as well as in the memory of all persons connected with ships and shipping during one of the periods most important to our Maritime interests. The paper now published is the first portion of a work on the Shipping of all Nations, a work worthy of his name. Its first appearance in the columns of the *Nautical Magazine* is peculiarly gratifying.—Ed. N. M.]

ANCIENT GALLEYS.

Frequent reference has at various times been made to the row-galleys of the ancients, and no subject connected with shipping has called forth more conflicting opinions: nor is this surprising. Most ancient writers who refer to it are less or more at variance with each other; while the engravings on coins and monumental sculptures are generally so confused and contradictory that they afford little assistance in its elucidation. Within the last two centuries numerous authors have endeavoured to solve the problem how these galleys were classed and rowed, and to establish a system of propulsion which, while applicable to every class, would harmonize with the accounts preserved of the size of these vessels and of the number of rowers employed on board of them.

DIFFERENT DESCRIPTIONS.

Galleys appear to have been rated by their banks of oars, that is, uniremes had one, biremes two, triremes three, quadriremes four, quinqueremes five, hexiremes six, septiremes seven, octoremes eight, and so forth, up to the enormous ship, with forty banks of rowers, built by Ptolemy Philopater. But the chief point of controversy has been what constituted a bank or *tier*.

According to Homer, the Greek fleet at the siege of Troy consisted entirely of uniremes. They were then undecked, with the exception of a platform at each end on which the archers or principal fighting men stood;* and were guided by oars or sweeps at both extremities, so as to ensure rapid evolution. Pliny† states that the Erythreans were the first who built biremes. Various writers give the Corinthians‡ the credit for having been the first to construct triremes. "And now Greece," remarks Thucydides,§ "began to construct navies and to apply herself more assiduously to nautical affairs. The first who introduced a change in the structure of vessels, so as to form them very nearly in the present mode, are said to be the Corinthians; and *triremes* are thought to have been built first for Greece at Corinth. It appears, too, that Amiocles, a Corinthian ship-builder, also constructed four such vessels for the Samians."

Although triremes, in the time of Thucydides|| and for some centuries afterwards, were more approved for purposes of war than any other description of vessel, the authority of Pliny, Diodorus, Siculus, Athenæus, Polybius, and others, is sufficient proof that vessels of four, five, six, and ten banks of oars were built;—that

* B.C. 1184.

† About B.C. 900.

‡ B.C. 786.

§ Thucydides (Bloomfield), vol. i. book 1, c. xii. p. 37. || B.C. 450.

Alexander increased the number of banks to twelve;—that Philip, father of Perseus, had a galley of sixteen banks; and—that vessels of four and five banks were frequently engaged in war. The triremes, however, were much more numerous than any other class of galleys except those which had only one bank of oars. Themistocles built three hundred triremes for the purpose of carrying on the war against Ægina; and he obtained a decree authorising the construction of a further, but limited number of these vessels from the produce of certain mines. After his time, twenty triremes were annually built by the Athenians, so as to maintain in efficient order a permanent fleet of from three to four hundred vessels of this description. Triremes consisted of two classes, fighting ships and transports. The former were propelled at great speed frequently reaching seven to eight miles an hour; the average number of rowers employed on each, varying from fifty to two hundred. The transports were bulkier and stronger vessels, and, though armed, were not brought into action except in cases of urgent necessity.

No mention is made of any vessel* with more than three banks of oars having been employed in the Peloponnesian War, but quadriremes and quinqueremes were known † in the reign of Dionysius I., of Syracuse, and were employed by the Carthaginians ‡ in the first Punic War, who had also in their service some vessels of the hexireme and septireme class. From the ease, however, with which the Romans captured these large vessels (even allowing for their superior energy and vigorous mode of close action), they were evidently much less efficient in proportion to their size than triremes. Nevertheless, according to the testimony of Plutarch, very large galleys were in high favour with Demetrius Poliorcetes, whom he represents as a prince possessing superior knowledge of the arts, and of a highly inventive turn of mind. That prince, he states, caused several of fifteen and sixteen banks to be built, he himself superintending their construction; and so formidable are these vessels said to have appeared, that Lysimachus, when he had ocular confirmation of reports he had heard of their strength and capacity, raised the siege of Rhodes rather than encounter them in action. Plutarch also states that Anthony possessed a fleet of no less than five hundred armed vessels, magnificently adorned, having eight and ten banks of oars, and that he selected the best and largest of them for the celebrated battle of Actium. However exaggerated some of the accounts preserved of these very large galleys may be, and however imperfect and inconsistent the descriptions of them by ancient authors, their existence has been established beyond all doubt.

* B.C. 431 to 404.

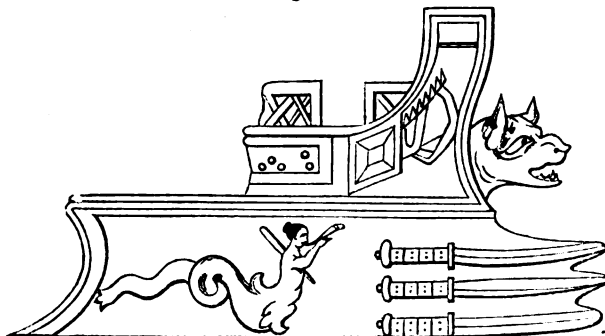
† B.C. 400.

‡ B.C. 265.

THEIR OUTFIT.

With reference to their outfit, it is sufficient to state that, in nearly every instance, they were highly ornamented with figures carved on the bow and stern. Below the bow, and between it and

Fig. 1.

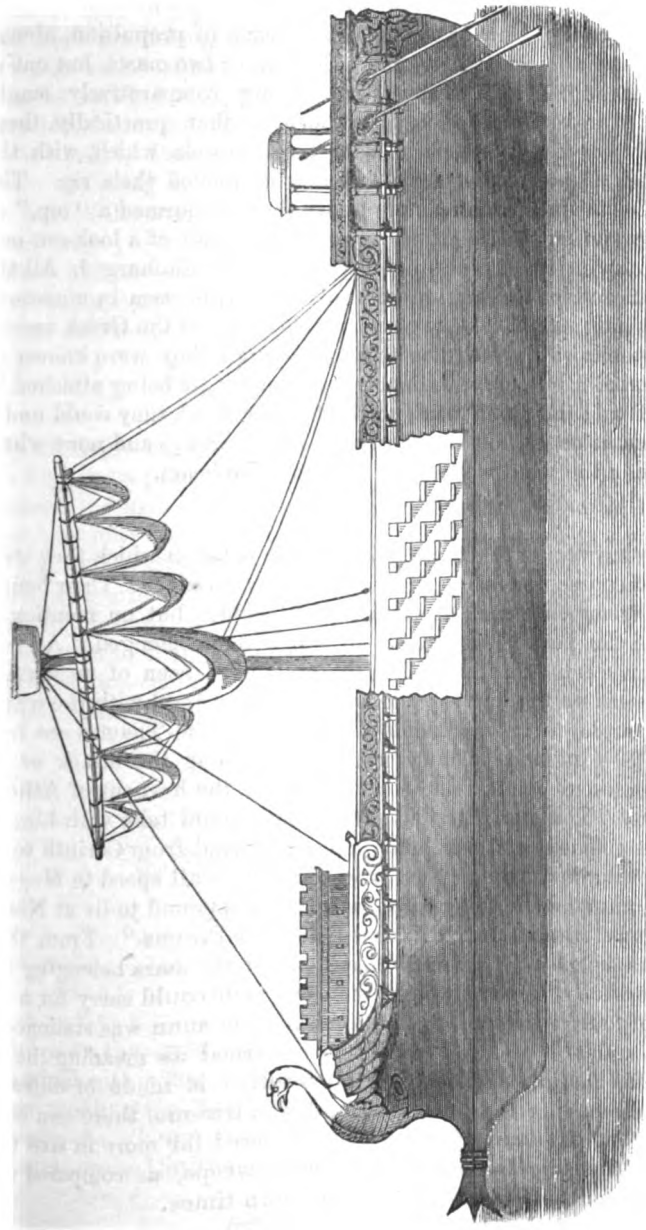


the fore foot or keel, there was generally a projecting piece of very strong timber, to which was attached either a ram's head, sharp metal bolts, cleavers, or some other instrument of destruction.

BEAKS AND ROSTRUMS.

These beaks were at first constructed so as to be visible above the water, but afterwards they were immersed, like the beaks of the iron-clad rams of our own time, themselves evidently copies from original Grecian and Roman designs. The most trustworthy illustrations of these have been taken from the Trajan column and a few coins of the period of which the drawing on Fig. 2 exhibits a fair representation. Nearly the whole of the ancient war galleys had their bows and sterns considerably elevated above the level of the deck. From the former, or the "*coursier*"—centre platform—an officer regulated the duties of the rowers; whilst the pilot directed, from the quarter-deck, the course of the ship. In many cases, this officer sat under a highly ornamented canopy, from which he issued his commands, and, behind it, there was usually carved the image of the tutelar deity of the galley. From the flag-staff floated her ensign or private signal; and, sometimes, a large vane on the taffrail pointed out the direction of the wind. In the column of Trajan a lantern is shown suspended close to the stern in one of the galleys. Each trireme carried two wooden ladders and three "*spreads*," poles of different lengths.

FIG. 2.



MR. LINDSAY'S PAPER ON ANCIENT GALLEYS.

MASTS AND SAILS.

Although the oars were the chief means of propulsion, almost every vessel above a trireme had either one or two masts, but one of them, from raking forward, and being comparatively small, resembled in many respects a bowsprit, so that, practically, there was only one mast, except in very large vessels, which, with the yard and square sail attached, usually completed their rig. The portion of the mast immediately above the yard formed a "top," or structure similar to a basin, serving for the purpose of a look-out or a place from which arrows or other missiles could be discharged. All the Athenian galleys had square sails only, as may be seen in numerous illustrations; and it is very questionable if any of the Greek vessels used topsails of a triangular form \triangle , though they were known to the Romans; but, from their form, the wide part being attached to the yard and the point reaching the topmast head, they could under any circumstances, have been of very little service, and none whatever when the wind was abeam or before the beam.

OARS.

The oars varied in size according to the bank on which they were used, of course increasing in length as they ascended. Their length in a trireme is stated at from 9 to $9\frac{1}{4}$ cubits, but no mention is made of the part of the vessel to which they belonged. An oar, however, of only 14 feet in length could have been of no service, unless used on the lowest rank and almost on a level with the water. Those employed in the smallest wherries of the Thames are from 12 to 14 feet long. Thucydides* in describing the attack of the Peloponnesian commanders on the Piræus, the harbour of Athens, remarks, "The plan was that each sailor should take with him his oar, his cushion, and his thong, and go by land from Corinth to the sea over against Athens, and proceeding with all speed to Megara, should put off with forty triremes which happened to lie at Nisæa, their naval station, and sail immediately for Piræus." From these remarks it may be inferred that none of the oars belonging to a trireme were of greater weight than one man could carry for a distance of four or five miles; and that only one man was stationed at an oar, unless "his oar" might be construed as meaning the oar under his charge.—But though no mention is made of different-sized oars having been used on board of a trireme, there can be no doubt that the oars of the ancients differed far more in size than those of the river barge or man-of-war sweeps, as compared with the sculls of the Thames wherry of modern times.

* Vol. i. book 2, c. xciii. p. 512 (Bloomfield).

This is clear from the fact that while various ancient writers mention oars of $9\frac{1}{2}$ cubits in length, Athenæus distinctly states that the oars belonging to Ptolemy Philopater's large ship were 38 cubits long.* Here we have a specific account of oars varying from 14 to 57 feet in length, the latter requiring to have lead embedded in their handles as a counterpoise to the weight outside the rowlock.* Besides it is clear that the oars must have increased in size according to the banks on which they were employed. In the case of the oar 57 feet in length, if worked from a great height a very large portion of it would require to be inboard—say 19 feet against 38, and even the one-third would not, at a line of 9 feet above the water, be sufficient as a counterpoise, unless the shoulder of the oar were of unwieldy thickness or heavily weighted by lead.

MODE OF ROWING.

In all single-banked vessels the oar worked on the gunwale, and was kept in its place by means of a leather thong. In larger galleys it passed through an oar-port. Various ancient writers assert that there was only one man to each oar, and add that he sat, when rowing, on a single bench or small stool attached to the ribs of the vessel, and within a very short distance from the *scalmus* of his oar. It would, however, be altogether impossible, under any circumstances, for one man to handle an oar fifty-seven feet long; and no man seated within a couple of feet of the side could work even a fourteen-foot oar to advantage, or indeed at all.

(*To be continued.*)

SOUTH AMERICAN SKETCHES.

BY W. COSMO MONKHOUSE.

1. A RIDE ABOUT LIMA.

BONG! goes the great bell of the church of San Domingo. Bong! A fine bell with a sound suggestive of a rich amalgam of sonorous copper, tinkling tin, and ringing silver. The vibration dies only to be renewed. Then another bell joins, whether of the stately Cathedral, or the Church of La Merced it is hard to say; then another,

* Athenæus, book 5, c. xxxvii.

and another. That all the bells of all the churches ultimately swell the chorus, I am not prepared to affirm (there are sixty-seven churches in Lima, and the principal ones have two large bells and several smaller ones), but the din soon becomes sufficient to render sleep difficult. The ringing of bells, or the tolling of bells, may conduce to reverie, if not to slumber; but they do not ring or toll bells in Lima—I doubt if the bells have clappers—they strike them, they clatter them. While one man strikes the bell with a huge hammer occasionally, others—men or boys—are engaged incessantly in clattering on its rim. Bong—clatter-clitter-clatter—bong—bong—clitter-clatter-clitter—bong—clatter—bong—clitter—clitter-clatter-clitter—bong. This is what the bells say in Lima.

Except that one never feels inclined to do anything here, there is little temptation to stay in bed, if one cannot sleep. A hard straw mattress and a sheet that will not cover your feet and reach your chin at one and the same time are irritating facts, even though the straw save you from fleas, and it be too hot to require cover. Nor are the sights that enter upon my vision as my eyelids slowly open, such as the mind dwells upon with sleepy satisfaction. A skylight with a hideous turkey buzzard outside, a narrow but lofty room without other windows, a stained floorecloth, a rickety table, a musty sofa, and a dingy white paper on the walls, streaked with stains of expectoration. The last phenomenon is, I believe, exotic. I never saw the like in any other apartment in Lima or elsewhere. Probably its last occupant was a Yankee, who had whiled away the early morning by practising at mosquitos, which, however, all his efforts had failed to exterminate.

People who are fond of sport are, as a rule, too much occupied in the science of capture to devote themselves to Natural History, otherwise Peru would probably have produced some first-rate entomologists. Though the room is covered with a smooth cold-surfaced oilcloth, experience has taught me to be careful not to place my foot thereon unguarded. To use the expression of two English servant girls who sleep in the next room, and whose artless conversation I am forced occasionally to overhear, "the fleas hop about like magpies." The great secret of undressing in Lima is to place all your clothes far enough off the bed, to prevent communication by the most desperate or ingenious insect, and yet near enough to reach without putting a foot on the floor; undress standing on a cane-bottom chair, brush yourself all over, rub yourself down with a towel, and take a flying leap into bed. So only can you hope to have less than a dozen bedfellows, and to be tolerably

comfortable for half-an-hour after you have dressed in the morning, for more than this it would be Quixotic to strive.

My toilette is not completed before there is a cheery knock at the door, and my friend who has promised to devote the day to me, makes his appearance. A good looking man, not tall but well-made, a thorough Peruvian, not stout but well covered with flesh. There is a roundness and suppleness about his face and figure that lend a grace to all his movements. Thick curly hair, and moustache as black as ebony, a sallow skin, large round eyes like grapes, a constant smile on his full red lips, and a presence beaming with a mixture of self-satisfaction and desire to please.

"I fear I am late," I say.

"Oh, no. There is no hurry whatever. My time is yours," he says politely, "I will take a seat till you are ready."

He smokes his cigarette, apologises that he cannot ask me to breakfast, as his wife has recently lost a relation. "They are so particular," he says, always speaking of his own countrymen as "they." He has travelled and been to Europe.

Something like an old English inn in the arrangement of the bed-chambers round the courtyard, each with its door opening on to a gallery, is my hostelry. I lock my door, deliver the key to the boy who does the duties of chambermaid, and descend. We take some coffee in the *comedor* or eating saloon, a large chamber furnished in French style, with small tables and mirrors, and with a bar piled with confectionery, fruit, sausages, and other comestibles, and backed with shelves of bottles. There are two countrywomen, nearly pure Indians, with dark complexions, high cheekbones, and melancholy faces, trying to sell their merchandize to the proprietor.

One has a basket full of crawfish or *camerones* fresh from the Rimac, splendid fellows like small lobsters, and some few dozen of small fish called *pecaré*, something like smelts in appearance and taste. The other has *paltas*,* *cherimoyas*,† *granadillus*,‡ and other strange looking fruit.

* *Paltas*. A fruit of the first order. Known in Brazil and the West Indies, under the name of abocarte or alligator pears. Shaped like a pear, it has a hard rind and contains within a beautiful nutty custard and a heart-shaped kernel or stone. It is equally good with salt and pepper, or sugar and limejuice, or oil and vinegar, and can be taken as a fruit, a salad, or a vegetable.

† *Cherimoyas*. Curiously shaped, something between an apple and a kidney, covered with a hard green rind, divided into scale-like facets. The consistency of the pulp is like cream, and its taste very sweet and luscious. Its pips are like hard black beans. It varies much in size, some are as large as a man's head, some as small as his fist.

‡ *Granadillus*. The fruit of the passion flower, like golden eggs. The rind is hard and filled with seeds like a gooseberry.

After a few words with the host, with whom I got on excellently in conversation, as he speaks all foreign languages equally badly as myself—he is German, I, English, but our native languages we do not use to one another—we sally forth narrowly escaping a kick from a mule in the doorway. The mule is the quietest of animals in appearance, and like all mules in Peru, is long suffering but vicious, has to bear much, and revenges himself once in six weeks by a casual kick at a stranger. Usually at this time the streets are empty except of a few women going to or from mass, and a few country folks with farm produce, but to day there is a little more bustle as it is a great feast day* at one of the churches, *La Merced*. In the front of the church are already set tables, on which Indians are putting out cakes and sweets, and large glass vases of *chicha*, the native drink, made from maize, a dull looking yellow fluid, something like barley water in appearance, but pleasant to the taste.

It does not rain in Lima, but this morning there is the nearest approach to it I ever experienced there; a thick mist is falling turning the dust on the pavement into a brown paste suggestive of London. It is slippery walking, and I am not sorry when we turn out of the street into the stable where our horses are awaiting us. Well, I scarcely know whether I am sorry or not, as I have been thrown off a horse the day before and my shoulders are still aching. I look with some anxiety towards the dark recesses of the stable whence the untried steed is being drawn out. It is not very big when it comes, but yet a tall horse for Peru; it is cream-colour or was after its last wash; it puts back its ears ominously and there seems to me an uncomfortable curve upwards in its back. "He is a very good horse," says my friend, "a *courseur*," (whatever that may mean) "he will beat any horse in Lima." I do not want to course, nor to race, but I say nothing, but mount. My friend's horse is superbly trapped in Peruvian style, the saddle has a peak before and a peak behind, and is covered with a black hairy rug, there is silver on the bridle and the stirrups. The horse is black, short, round in the neck and flank, something between one of Wouverman's horses and those you see in Greek bas-reliefs, he treads the ground proudly like Marmion's charger, and my friend is scarcely seated before he is galloped away with down the street with a tremendous clatter of steel and flint. My friend however is equal to the occasion, and returns in a few moments with his horse foaming at the mouth. "He is very wild," he says. I inwardly hope that my horse is not, and we slowly proceed down the street. My horse's gait is to say the

* The feast of *La virgen de las Mercedes*.

least of it uncomfortable; he takes too short steps to rise to, he will not walk, and there is an occasional sudden jerk as though one of his legs slipped out of its place and came up through the saddle. My friend's horse trots slowly and stately, but my friend does not rise in his stirrups (no one in South America does), but with straight legs and only the very extremity of the toes in the stirrup he jogs on, finding some difficulty in keeping his horse in. "Few of their horses trot," he explains, "but mine is a trotter, yours is a pacer. I like a trotter." The trotter takes advantage of the conversation to become a galloper again, and my pacer follows suit. The trotter is reined up with difficulty, the pacer far too easily, one slight pull at the reins brings him on his haunches. My friend is more alarmed than I. "You must not pull like that," he says, "you have such a powerful bit"—I had seen a few pounds of iron put into my horse's mouth, a straight flat bar with a sharp edge and a ring that would serve for a knocker. This combination of curb and snaffle was attached to one rein, or rather two reins bound into one neat round rope of leather, to which the whip, a stout handle with a broad thong, was attached. I had as stated given but a slight pull, and I inwardly wonder at the advantage of such a powerful bit if you cannot use it. Peace of mind is scarcely restored before my friend's horse runs away again, and again mine. This time I wait for the animal to stop, and away he goes increasing his pace at every stride, long after my friend has pulled up. As soon as I am beginning to enjoy the gallop, I hear my friend shouting in the distance, "Pull him up! pull him up! he is a courser!" I try to do so accordingly, but the strong bit seems quite powerless; at last after exerting all my force, I succeed in bringing him to a standstill. My friend gallops up with dismay still remaining on his face. "Ah, that horse!" he says, "he has such a hard mouth, no bit will stop him if he once takes to his heels." The future management of the animal appears to me at the moment an insoluble problem. Am I to be doomed throughout the whole ride to that miserable jolt, varied by an occasional run-away, with a bit that pulls him on his haunches when he starts, but is powerless when he takes to his heels? An accident solves the difficulty; raising my rein-hand a little, my horse changes his uncomfortable gait for the real 'pace:' taking shorter steps and scarcely raising his feet from the ground, he runs along without moving his rider from his seat. "Ah, that is right," says my friend, "you should always hold your hands high like that." I think he might have told me so before.

We are outside the city, though not outside the fortified walls, part of which are destroyed and all useless for purposes of defence.

It is cloudy, and the mist still falls. On our right stands the new prison, the *Penitenciaría*, a capital place for its purpose, I believe, but not lovely. Behind us lies the town with its many towers, around us is a desert of dust fringed on the left with miserable mud built *ranchos* or cottages, and a wretched looking mud built, be-plastered, and be-painted church. Across the small desert saunters an irregular troop of loaded mules, raising such a cloud of dust that you can only see a foot here and a tail there. Before us, dimly seen through the dust, rise a few trees surrounding a beer garden—they make tolerable light beer here—and the road to Chorillos.

Along this road we go a little way to see the country. A level plain stretches on either hand; the land is very fertile and there are more trees, because there is more water, than is usual. But still the peculiar feature is the bareness of the ground. In the road there is not one weed. Instead of hedges, walls made of big squares of sunbaked clay, brown, unsightly, untidy. If the field on the right is rich with a fine crop of tall green maize, the field on the left will be bare as the sea shore. Nothing grows without water, everything with. Without artificial irrigation the land would be a desert, with it, it might be made a Paradise, though a dusty one probably. For all things are covered with dust. It rises in clouds at every step, every leaf of every tree in the orchards is powdered with it, the green of lower shrubs is almost invisible through it. Presently we come upon a little stream that gurgles by the side of the road, and have good proof of the soil's fertility. You can hear the water but can scarcely see it, it is hidden amongst rushes and sugar canes, its banks are wildly overgrown with magnificent nasturtiums, roses, a hundred varieties of water and land plants. But on each side at little more than a foot the verdure stops dead, you might almost rule the line, so sharp is it where the barren dust begins; and the flowers, beautiful as they are, would want washing before they would be fit to give to a lady.

Then we turn back, re-enter the city, and canter along the south wall, looking down on market gardens and farms. Then we cross the city to the north-east gate, through obscure streets ill paved with boulders from the river bed, with open sewers in some of them, thronged with the foul turkey buzzards* feeding on foul things. There is no place free from these black harpies. Over the gateways of the houses they stand with their black wings distended to dry, like caricatures of heraldic eagles. One wonders how superstitious persons, and the Peruvians are so, can cross a threshold presided

* *Gallinazas*. Why they are called turkey buzzards I don't know, crow vultures would be the more appropriate name.

over by these ill-looking fowls. They huddle together on the eaves, and now and again one flops down with an uncouth swirl into the gutter. Two of them are at work on the body of a dead kitten; one has stuck its hooked beak into the eye-socket, the other into the bowels; one pulls one way, the other the other, with spasmodic hops and half-opened wings; between them poor pussy vibrates as though galvanised. The shameless energy with which these animals pursue their disgusting vocation is almost human. But there is another side to their character. A Yankee once remarked to me, "Myself, I like these fowls, I do. They have about the very meanest employment of any beings I know, and they don't grumble. They are the only creatures who do their duty in this God-forgotten country, and get no thanks and most inferior food. I guess, they are about the cheapest sanitary arrangement known, and save this city a million of dollars yearly, not to mention lives."

We have not much time to attend to the people and the buildings—and I have no space to attend to them in this paper—but pass on through the *Portada de Maravilla* into the country again, past dusty orchards and along dusty roads till we come to the Cemetery or Panteon. We tie up our horses outside the chapel, and pass at once into the cemetery. It is more like a garden. Except a few marble statues to distinguished men, all of which are, I think, the work of European sculptors, there are no monuments. Nor are there any graves such as we are accustomed to see; no mounds turfed or unturfed. One reason is that grass will not grow, the other, that only the very poor, my companion tells me, are buried under ground. From the fragments of bone that plentifully bestrew the flower beds, it would seem that the mortal remains of the very poor are not regarded with superstitious reverence. I picked up several teeth near a rosebush. Radiating like huge honeycombs from the middle of the garden, and ranged along the sides of it, are long plastered walls, as thick as coffins are long. The resemblance of these walls to honeycombs is forcible, as they are pierced by four or five tiers of cells in which the coffins are placed, and when each cell is sealed up an indented place of the shape of the cross-section of a coffin is left in which to place a tablet. Some have marble tablets, some copper or bronze, some have nothing but a date rudely scratched on the plaster, some appear as though the tablet had been torn off. I find this appearance to be indicative of the fact. Formerly copper tablets were commonly used, but they were stolen for the sake of the metal. "They are such thieves," my companion says. I ask why comparatively few cells have

tablets, as the cost cannot be great. He explains, "You see they are not all buried for life." I ask further explanation; "You can purchase a tomb for five years, or for life; five years costs 50 soles,* to secure one for life you have to pay 100 soles." I now understand "for life" means "for ever." He afterwards tells me the reason of the dates scratched on the plaster—it is in order to calculate when the lease of the dead man is up. Then if no relative or friend renews the lease, the tenant is ejected and burnt. As the walls are built and the cells made together, and in advance of demand, they are mostly of the same size, but there are special walls for very large persons. To a sensitive fat man in Peru, death must have a terror unknown elsewhere.

It is a very interesting place this cemetery, with its solemn-peopled walls, its cypresses and its flowers, and we spend some time sauntering about. The *presence* of the dead is, I think, more felt than in ordinary burying grounds, where the grass grows over them, they do not seem so entirely "gone" here. We linger a little by the children's little wall, and we mark where the hundreds that died of yellow-fever two years ago are lying. Whether it is from the haste with which the fearful workmen laboured, or some special exudation from bodies dead through this disease, my companion cannot say, but the plaster on nearly all the cells in which they lie is marked with stains of damp.

As we renew our ride along the dusty road, my companion tells me strange stories of the superstitions of "them," his countrymen, of the annual feast of the dead, when everybody comes to the Panteon, and responses are chanted for the deceased while the living flirt. Then the place is thronged with visitors and professional response singers, *canchadores*, clergymen, and monks. There are so many that competition is rife, and prices sink to three responses a real, or about three half-pence apiece.

Our next visit is to the Government gunpowder manufactory, also a beautiful garden full of trees and flowers. Here they grow pollard willows for making charcoal, and burn lime. There is plenty of water, and as a consequence a low agueish fever called Terciana prevails, as indeed it does along the whole valley of the Rimac, which, on this account, is said to have been in the days of the Incas, the place for sending criminals. The city of Lima was founded by Pizarro.

Since we turned our faces northward from the road to Chorillos we have been journeying towards mountains, but they are on the

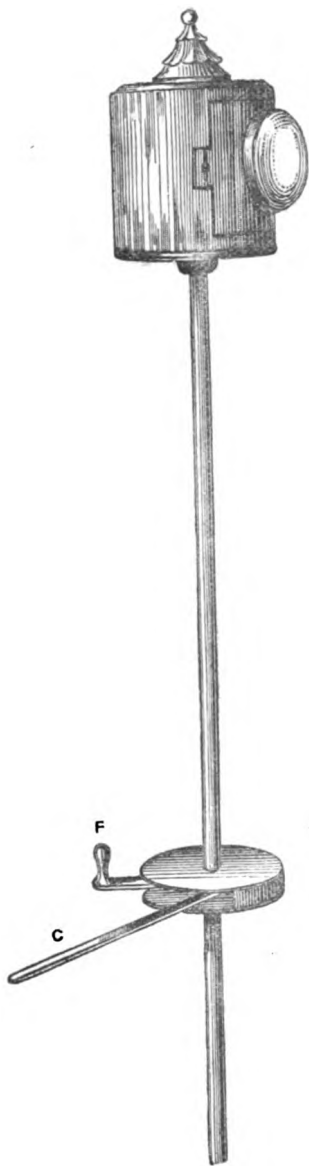
* About ten pounds.

other side of the river, over which there is only one bridge, which is far west of where we are. We now turn back and pass again through the greater portion of the city from east to west, and cross this bridge, through a picturesque gate with turrets. The river bed looks like a copse so thickly grown is it with bushes, only here and there you see a small stream running between large boulders. A few months ago it was a seething torrent, and a few months hence it will be one again. Along the south margin, apparently in the very bed, is being made the new Oroya Railway. The town on the opposite side seems to have much the same relation to Lima as Southwark to London. There is no style about it, and the houses are old, dingy, and out of repair. But as before, we have no time to attend to these things, but pass rapidly through to the mountains, and before long reach them at a place called *Amancaes*, after the large yellow flowers that grow there. This is a great resort for pleasure parties, and the President has a country house here. The time has passed for the parties, and there are only a few *ranchos* and an inn, at which latter establishment we have a reviving *glass* of Pisco—the native spirit—before we proceed up the gorge. The hills are sparsely covered with verdure, and streams trickle down their sides. The mist has long ceased, and the clouds have partially disappeared. The atmosphere is heavy but not painfully hot, and the scenery is more beautiful than anything we have yet seen. In front of us the hills with cattle and goats wandering high in search of food, behind us the slope coloured with many flowers and a magnificent view of many-towered Lima.

THE INTERNATIONAL CODE.

SIR WILLIAM MITCHELL'S NIGHT SIGNALS.

ONE of the greatest advances made of late years in connection with the merchant navy, not only of England, but of the world, is the establishment of an international code of signals. This code is the common language of the sailor throughout the globe. By it a seaman of whatever country, speaking the language of that country, can converse with the seamen of every other country. It is, indeed, the universal language. Any ship carrying this code can always express her wants, and always convey information to,

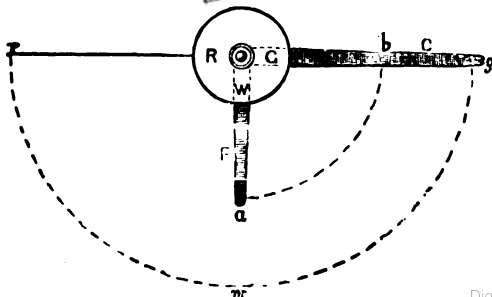


NIGHT SIGNAL TABLE.

[ENTERED AT STATIONERS' HALL.]

The following Table shows the three equal divisions of the International Code Signal Letters, under their respective Colours, White, Red, and Green, with the number of Flashes for making each Letter—

WHITE.		RED.		GREEN.	
No. of Flashes.	Signal Letters.	No. of Flashes.	Signal Letters.	No. of Flashes.	Signal Letters.
1	.. B	1	.. J	1	.. Q
2	.. C	2	.. K	2	.. R
3	.. D	3	.. L	3	.. S
4	.. F	4	.. M	4	.. T
5	.. G	5	.. N	5	.. V
6	.. H	6	.. P	6	.. W



or be warned by other ships, or signal stations ashore, whilst if she does not carry it, but still adheres to some obsolete code, she is left out in the cold, can often get no assistance, and can make no intelligible communication. In more than one instance has a ship and all on board perished through inability to make her wants known by a signal that would be every where understood. The system, however, is at present of use only in the day time. To make it of use at night, Sir William Mitchell—whose endeavours to benefit his fellow-man by extending the code are so well known—has invented a system of night signalling. This system is now before the proper authorities in this country, and we hope to be able shortly to inform our readers that it is adopted:

By means of the signal lantern, of which an illustration is given on the opposite page, the whole of the *International Code Signals* may be made and interpreted AT NIGHT with the greatest ease and facility. In the interior of the lantern there is a simple mechanism—which cannot get out of order—for changing the colour of the white light to a red, or to a green light, by means of the lever c. There is also a dark slide connected with the lever F for making the flashes.

On board ship the signal lantern may be shipped like a stanchion, in places made for the purpose, on the bow or quarter. If, however, it is desirable to make the signals from a greater height, the lantern can be carried to the tops, fixed there, and worked from that position.

To “*call attention*” of a ship, or shore signal station, with which communication is desired:—

1. Fire a gun, if there is one on board.
2. Open the light by placing the lever F at the point marked *b*, and then move the lever c to and fro, between the points *g*, *w*, and *r*; this will cause green, white, and red lights to be shown in quick succession. The movement of this lever should be continued until the “*attention*” signal is answered. As soon as the signal is answered* the light should be shut off, by moving the lever F from *b* to *a*. After a short pause proceed to signal by making the number of flashes (white, red, or green) indicated for each letter.

In making the *International Code Night Signals* the following rules should be observed:—

3. The flashes should be made slowly and regularly by moving the lever F from *a* to *b* and back again to *a*.
4. After the number of flashes have been completed for a letter, allow an interval of time to elapse equal to three flashes, before commencing the flashes for the next letter.

5. When the signal has been completed, the red light should be opened, to indicate that the signal is finished. The red light should remain open until the answering signal is received, but if, after an interval of time, equal to twenty flashes, no answering* signal is received, shut off the red light, and repeat the signal.

6.* The *answering* signal, if the signal is understood, is in all cases the *repetition of the signal sent*.

The following is an example of a ship communicating with another ship, or with the shore.

SIGNALS FROM THE SHIP SENDING THE MESSAGE.	ANSWERS FROM THE SHIP OR THE SHORE RECEIVING THE MESSAGE.
<p>FIRST SIGNAL.</p> <p>—</p> <p>“Attention.”</p>	<p>(<i>To Ship's Attention Signal.</i>)</p> <p>Show a succession of green, white, and red lights, as directed on the other side, and continue the answer until the ship shuts off her signal light preparatory to making her signals.</p>
<p>SECOND SIGNAL.</p> <p>—</p> <p>“Name of Ship.”</p>	<p>(<i>To Ship's Second Signal.</i>)</p> <p>If the ship's signal is understood, repeat it by making the No. of flashes of white, red, and green to indicate the letters QHMF</p> <p>If the ship's signal is not understood, wait for the ship to repeat the signal.</p>

(1st) Fire a gun, if there is one on board.
 (2nd) Show a succession of green, white, and red lights, as directed in the instructions (No. 2), and continue the signal until an answer (as opposite) is received, then shut off the light.

(Q) 1 Flash green.
(Interval equal to 3 flashes.)
 (H) 6 Flashes white.
(Interval equal to 3 flashes.)
 (M) 4 Flashes red.
(Interval equal to 3 flashes.)
 (F) 4 Flashes white.
(Interval equal to 3 flashes, and then open red light as directed in the instructions, No. 5, on the other side.)

QHMF—“*Briton*, of Southampton.”
 OWNERS—(Union Steam Shipping Company.)

SIGNALS FROM THE SHIP SENDING THE MESSAGE.	ANSWERS FROM THE SHIP OR THE SHORE RECEIVING THE MESSAGE.
<p>THIRD SIGNAL. — "Report to Owner."</p> <p>(P) 6 Flashes red. (Interval equal to 3 flashes.) (Q) 1 Flash green. (Interval equal to 3 flashes.) (G) 5 Flashes white. (Interval equal to 3 flashes, and then open red light as directed in the instructions No. 5, on the other side.) PQG—Report me to my owner.</p>	<p>(To Ship's Third Signal.)</p> <p>If the ship's signal is understood, repeat it by making the No. of flashes of white, red, and green to indicate the letters P Q G</p> <p>If the ship's signal is not understood, wait for the ship to repeat the signal.</p>
<p>OR,</p> <p>THIRD SIGNAL. — "Report to Shipping Gazette."</p> <p>(S) 3 Flashes green. (Interval equal to 3 flashes.) (B) 1 Flash white. (Interval equal to 3 flashes.) (Q) 1 Flash green. (Interval equal to 3 flashes, and then open red light as directed in the instructions, No. 5, on the other side.) SBQ—Report me to the Shipping Gazette.</p>	<p>(Or, to Ship's Third Signal.)</p> <p>If the ship's signal is understood, repeat it by making the No. of flashes of white and green to indicate the letters S B Q</p> <p>If the ship's signal is not understood, wait for the ship to repeat the signal.</p>

Captain Braine, the harbour master at Ramsgate, has reported as follows to Captain Sir William Walker, H.C.S., etc., Board of Trade.

"On the evening of the 29th December, Sir William Mitchell's Patent Signal Lanterns were preliminarily tried here. * * One lantern (8-inch lens) was placed on the deck of the Tug, another (6-inch lens) on the East Pier Head. The Tug proceeded out of the harbour, steering in the direction of the Downs, and when about two miles from the harbour the engines were stopped, and the vessel allowed to drive with the tide. * * Signals were then made from the Tug by flashes of "Red," "Green," and

“White” Lights, according to the number required to indicate the letters in the International Code. These signals were distinctly seen with the naked eye, and understood by us on the Pier; we saw the signals quite distinctly, although the moon was at the time shining brightly in our faces. Those on board the Tug saw with the naked eye our signals on the East Pier Head, although our signal lantern was close to the flashing light.

“From what I saw of the lantern I should think that, on a clear dark night, these night signals might be seen with the naked eye at a distance of from two to three miles, and with a glass at a distance of four miles.

“After a few trials any person can learn to make the signals correctly. I consider these night signals to be far superior to any that I have seen, both for simplicity in working them and correctness in reading them. The trial was very satisfactory.”

Some experiments with this lamp were made at the Trinity House, on Friday evening the 12th January. One lamp was stationed at a window of the Trinity House and another at a convenient place in the Tower. Some brief instructions were given to one of the Trinity yachtsmen who had never seen the lamp before, and he was then sent to the Tower to manage the signals there. The signals made from the Trinity House were answered with great precision, and the trial was most satisfactory. The Committee who witnessed the experiments expressed themselves as highly pleased with the extreme simplicity of the apparatus, and they considered it would be most useful for signalling at night with the International Code.

We might bring forward much more testimony as to the efficiency of this invention, but we think that it is one of those things which simply wants attention drawn to it and then it speaks for itself, and utters its own praise.

A TRUE STORY OF A GOLDEN RING.

ON the 8th November, 1871, a public officer at Colchester reported that having seen a report in the *Shipping Gazette* that a bullock had been picked up by the crew of the smack *Mary Ann*, belonging to that port, and that in opening the said bullock a gold ring had been taken out of it, he had, in execution of his official duties, directed his deputy to call on the master of the smack for a report.

The master at once handed the ring to the deputy, who sent it to the proper Department in London. On further inquiry, it appeared that Captain Tye, the master of the *Mary Ann*, picked up a bullock on the 28th October, at 2.30 p.m., not 29th as had been said. The steamer from which the bullock was supposed to have been lost appeared to be a foreigner, and she passed the Spitway Buoy at noon on her way to the entrance to the Thames. The bullock was quite warm when the crew of the *Mary Ann* got it, and they cut it open to get fat to grease their rigging, when the ring was found. There is no doubt, therefore, that the ring was inside a bullock that had formed part of the cargo of a ship, and that the bullock and all in it came under the definition of "wreck," to be dealt with by the proper public officer under the Merchant Shipping Acts. The next step was to identify the steamer that entered the Thames with cattle on the day named. This was attempted, and her name first given was the *S. Eiderstadt*, but the officer reported that there was no record in the office books of any cattle missing from that vessel.

Another Department of the Government was then applied to, and from their reports and records it appeared that the only ship reporting the loss of cattle overboard on the 28th October, 1871, was the *Adler*. The report of that ship being that an ox which was thrown overboard at sea died from exhaustion through stress of weather.

So far, the *Eiderstadt* appeared from description to be the ship that passed Tye, but she had made no report of losing cattle. On the other hand the *Adler* had made such a report. At this stage of the proceedings a letter was received by Captain Tye from a gentleman of Nordenham, stating that he had read in the *Shipping Gazette* of the finding of the "golden ring, with an inscription and the date 1869 in the stomach of an ox."

It appeared from the letter of this gentleman that the lady whose name is on the ring is the wife of a wealthy farmer. But still there was nothing yet to show when the ring was lost, when it was supposed to have been swallowed by an ox, or by what ship the ox was conveyed.

The gentleman at Nordenham was, therefore, asked to obtain from the farmer some further information. It then appeared that in the year 1869 a wealthy farmer married the lady whose name is on the ring; on which occasion, according to the German custom they exchanged rings. The farmer it appears continued after marriage to attend to his flocks and herds; but one day last winter, whilst making "flour balls" on which to feed his oxen,

he lost his wedding ring. He gave it up as a bad job, as he did not know which flour ball it was in, or which ox, if any, had swallowed it.

He subsequently sold seven oxen to a dealer of the country. These oxen were shipped to England as part of a cargo by the *Adler*, on the 26th October. One ox, which proved eventually to have been one of our farmer's, was taken very sick, probably the ring and the sea together disagreed with it. It died, as was supposed from exhaustion, and was consigned to the sea, and in due course was picked up and opened by Tye. Tye is an honest sailor, and deserves all praise for his promptitude in advertising his discovery; and we trust that when the farmer and his spouse shall in after years recount to their children the giving, the losing, and finding of the golden ring, the happy pair will not fail to bestow a passing word in remembrance of Captain Tye, the good British sailor, and his tight little craft the *Mary Ann*.

AN OLD MAN OF THE SEA.

BY AUSTIN DOBSON.

“ * * *
SPENDIDE MENDAX.” *Hor.*

I marked his venerable look,
His weather-beaten hue;
He hitched his ancient clothing up
As man-of-war's men do;
He had the genuine 'tween deck stoop,
The measured step had he
Which comes from pacing on the poop,
This “old man of the sea.”

I said “Our days are iron days,
We have no more the grand
Old race of sturdy tars by which
Our wooden walls were manned;
Now here's a sample that, no doubt,
In skilful hands would be
A mine of yarns:—I'll draw him out,
This ‘old man of the sea.’”

I drew him out. It was not hard;
 (You could not call him shy)
 He seemed to guess the thing I meant,
 He winked his ancient eye;
 He paused but till his quid was stowed
 Within his cheek, and free
 His tide of recollections flowed,
 This "old man of the sea."

He spoke of "reefs," he spoke of "wrecks,"
 Of "ringbolts," "slings," and "spars,"
 Of "hawsers," "davits," "blocks," and "chocks,"
 "Cat-heads" and "capstan bars,"
 Each phrase commenced with "Blow me tight,"
 And ended with "D'ye see,—"
 His words were stronger than polite,
 This "old man of the sea."

He'd tried, he said, most all the ways
 By which a man can drown,
 He'd gone up with a waterspout,
 And with a whirlpool down,
 He'd seen his messmate cooked for soup,
 By blacks in Caribbee,
 And "crossed the Line" upon a coop,—
 This "old man of the sea."

He'd served, he said, with bold Benbow,
 And kept his pig-tail still;
 He'd also sailed with Captain Cook,
 And witnessed of his will;
 He knew the deck where Nelson groaned
 His last on Hardy's kneec,
 Indeed, that deck had holystoned,—
 This "old man of the sea."

He drew out yet. He'd "gashly wounds,"
 There worn't no Jack afloat;
 As could for wounds with him compare
 If he took off his coat.
 He'd all the scars of all the wars
 As you could name, (N.B.)
 I wish I'd asked to see your scars
 My "old man of the sea.")

He ceased at last. A trembling tear
 Bedewed his ancient lid.
 There weren't a many gents as gave
 A poor old Jack a quid;

STOPPING HOLES IN SHIPS' BOTTOMS.

His honour had a coin, mayhap,
That thankfully would be—
I dropped a crown within his cap,
That "old man of the sea."

"O England, O my country, thus"—
I sighed—"You treat the grand
Old race of sturdy tars by which
Your wooden walls were manned."
"What," said a passer, "'Spin-yarn Sam!'
"He ain't no seaman, he."
He was but a "sham Abraham,"
My "old man of the sea!"

STOPPING HOLES IN SHIPS' BOTTOMS.

McCool's SYSTEM.

THE loss of the *Megara* has directed public attention to the dangers arising from holes in ships' bottoms, which may occur at any moment, and are proved to be of more frequent occurrence than is generally supposed.

When a ship springs a leak, the greatest uncertainty usually prevails on board as to the safest and readiest means whereby she may be kept afloat. At first pumping may serve, but with the rush of water, even through a rivet hole, the size of the aperture increases, and at any moment, the water may gain on the pumps and the ship sink.

It is quite unusual that a vessel has the advantage of a diver on board, and not only has the leak to be discovered from the inside, but the *patch* on the outside should be applied in a firm and substantial manner, in any sea, from the interior of the vessel.

Mr. McCool (who by the bye has patented his invention) accomplishes this object in two ways. In either, dished plates are employed, with a soft and waterproof packing, and as a rule a plate is applied on both outer and inner side of the aperture. The dishing has the advantage of strengthening the plates, besides insuring a tight joint at the strongest part of the ship's side around the leak.

The main point, however, is the application of these plates in any sea-way and under all circumstances, when once the opening has been discovered. This is effected by dropping through the hole a long narrow weight of lead or other metal, attached to one end of a

cord or wire, the other end of which is secured within the vessel. The weight is then hauled on deck, by means of a weighted grappling line dropped over the bow, and drawn along underneath the vessel by means of cords, one at each side. The weight is then removed from its cord, and replaced by a threaded bolt or spindle, upon the outer end of which a metal plate with India-rubber or other elastic washer is screwed or otherwise fixed. The cord or wire is dropped overboard and by means of the opposite end, secured within the vessel, the bolt is drawn into the hole so as to bring the outer plate in position. Another metal plate and elastic washer is then fixed to the bolt on the inside, and the leak effectually closed.

Another plan, whereby the same object may be attained, is by employing a bar of any required length, and not too large in diameter to pass through the hole to be stopped. To this bar, at or near its middle, one end of a threaded bolt is jointed. The bolt can turn on its joint so as to lie upon the bar or within a slot in the bar; and when the bolt is in this position the bar and bolt are passed through the hole in the vessel into the water. The bolt is then lifted by means of a wire, and the end drawn through the hole into the vessel, the bar remaining outside across the hole. An India-rubber or other elastic washer and a metal plate are placed on the bolt, and screwed up tightly by means of a nut.

There are various kinds of bars, but the principle never varies, and the outer bar acts as a stay or support for the ship's side, and insures a proper hold for the plates and packing.

The first of the accompanying sketches shows the line and weight dropped through the hole in the ship's bottom, also the grapple for hauling the messenger line on deck, for the purpose of attaching the threaded bolt and patch.

The second cut shows the patch fastened to the messenger line, and ready to be drawn into its place over the hole, when the inner washer and plate can be readily and firmly fixed.

Fig. 3 gives a view of a round and square patch, showing both the inside and outside plate, with the threaded bolt and nut for fixing.

Fig. 4 shows a slightly curved bar and jointed bolt, with the plate and nut. Either a square, round, or oval plate can be used, as circumstances may require.

Fig. 5 is a double bar, with the screwed bolt working from the centre of the slot, and showing a round plate.

Fig. 6 shows the threaded bolt moving from the side of the bar, and drawing of an oval plate.

Fig. 1.

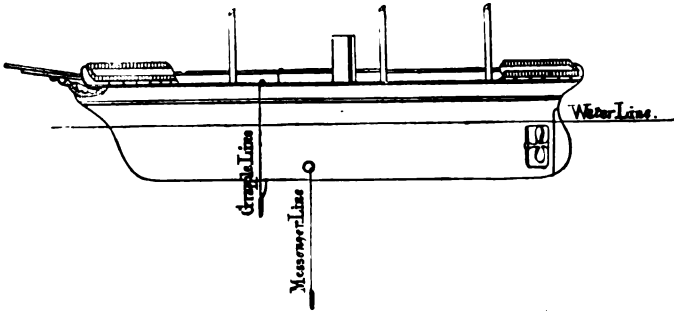
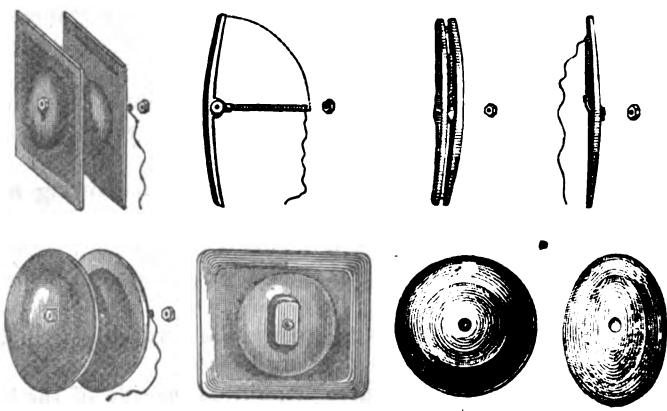
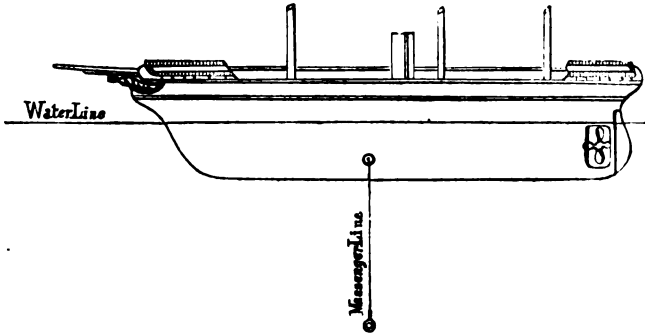


Fig. 2.



ELECTRIC LIGHT AT THE SOUTH FORELAND.

On New Year's Day the electric light was inaugurated at these lighthouses in the presence of Sir Frederick Arrow, the Deputy-Master of the Trinity House, Captain Drew and Captain Nisbet, Elder Brethren, Mr. Douglass, Engineer to the Board, and other Trinity House officials. His Royal Highness Prince Arthur had promised to attend, but at the last moment was unavoidably prevented.

Sir Frederick Arrow addressing those assembled, said that they had met on the first day of the New Year to inaugurate the change that had been effected in the system of lighting, the ordinary means of illuminating that point having been converted into electric lights of the greatest power and brilliancy. This had been done at a large outlay of money, labour, and skill, which, however, had been freely bestowed for the benefit of the shipping community. He (Sir Frederick) had not expected the duty of starting the machinery to produce the new light would have devolved upon him, for His Royal Highness Prince Arthur was good enough to promise that he would perform that task; but unfortunately His Royal Highness was unable to fulfil his engagement, but had desired him to express his sincere regret that he could not discharge a duty that His Royal Highness considered was one of national importance, and of great utility to the whole maritime community. The history of the electric light was pretty well known. The philosophic thought of Faraday practically utilised it, and for some years the Trinity Board had been engaged in making experiments and practical trials of it at Dungeness, and they had twelve months ago exhibited it as a revolving light at the mouth of the Tyne. It was now the privilege of the Board to give the benefit of this beautiful and effective illuminating power at a point where it would be of vast benefit to the maritime interest, and where it would be of the greatest value, owing to its position with regard to the opposite coast of France and the approaches to the North Sea and the mouth of the Thames. On the other side of the Channel stood also at Cape Grisnez an electric light of great power, which the French Government, following the steps of the Trinity House, had lately inaugurated in friendly rivalry—a rivalry, he was glad to think, that had produced fruits of kindness and goodwill, for it had been a great pleasure to his board when, in the sore strait the late war had reduced them to, the French authorities had applied to them

for aid. That aid had been cheerfully and promptly afforded. Happily, those times were past, and there now stood these towers on either hand of the Channel, true sentinels of peaceful progress—not for watch and ward against the coming foe, but for mutually aiding and protecting the approach to each other's friendly shores, and the safety and welfare of the fleets that passed through these well-known Straits. The completion of the works at the Foreland would form a triangle of electric lights described by those of Dungeness, Cape Grisnez, and the South Foreland itself. With these remarks, and the assurance that what the Trinity Board had done was done with a conscientious and faithful desire to discharge the duties entrusted to them, he would at once set the engines in motion, with a prayerful hope that their New Year's gift would be a blessing to the maritime community.

On the machinery being set in motion by Sir Frederick Arrow, the effect was in every sense of the word electrical. From each tower a beam of intense brilliancy flashed out on to the sea, and the result elicited a hearty cheer from the party who witnessed it.

The South Foreland towers are 449 yards apart, and their lights are respectively 372 feet and 275 feet above high water of spring tides. The electricity for the production of the light at each lighthouse is generated by one of Professor Holmes' magneto-electric machines, worked by a small horizontal condensing engine. There are two engines for each lighthouse—one used ordinarily, but in times of fog both. The electrical currents are sent from the machines by underground wires to the lantern of each lighthouse. The steam-engine, boiler, and magneto-electric machines are all duplicated, in case of accident or want of repair to any part. The supply of water for the steam engines is obtained from a deep well sunk through the chalk a depth of 280 feet, to the high water level of the sea. This well, although the water is remarkably pure and free from salt, is curiously affected by the action of the tide. During each flood-tide the well is quite dry, but throughout each ebb-tide there is an abundant supply of water.

The optical apparatus in each lantern is of the third order, but has been specially designed and manufactured for the purpose of the electric light. From the high lighthouse an arc of 246° is illuminated, and from the low lighthouse the arc illuminated is 199° . Those rays of light which if left to themselves would be diffused over the land and thus wasted, are utilised: in each case they are carefully gathered up, and by means of reflecting prisms arranged on each side of the main apparatus, are equally distributed over the portion of the sea surface meant to be illuminated, thus adding very considerably to

the power. Each apparatus is provided with an efficient oil lamp as a further precaution in case of accident. This is always ready to take the place of the electric spark at any moment.

This is now the third lighthouse station in England at which the electric light is established. At Dungeness it has been in successful operation for some years, and it has been recently placed in the new lighthouse at Souter Point at the mouth of the Tyne, an account of which we gave in the *Nautical Magazine* for February, 1871.

It is very satisfactory to be able to chronicle this progress in practical lighthouse science. The difference of the illuminating medium now established, and that in use a century ago at the same lighthouses, is somewhat striking; great blazing coal fires flared and smoked from these towers in the middle of the last century. Now a tiny speck of light darts a powerful piercing beam just in the direction required. The subtle fluid is made subservient to man's will, and its use is devoted to the benefit of humanity at large. Much praise is due to those whose energy and skill are cheerfully given to organise such great and beneficial improvements as the one we now record.

SAFETY VALVES AND STEAM IN MOTION.

By J. MACFARLANE GRAY, Mem. Inst. M.E. and N.A.

MANUFACTURING engineers are under the impression that it is a Board of Trade regulation that the area of the locked up safety valve shall be not less than half a square inch for each square foot of firegrate. The only regulation with reference to area of valve is the clause in the Merchant Shipping Act, requiring that, "if such valve is in addition to the ordinary valve, it shall be so constructed as to have an area not less, and a pressure not greater, than the area of and pressure on that valve." Beyond this the surveyor is quite unhampered in his consideration of the sufficiency of area of valve, and of its general fitness for the purpose for which it is intended. The object of having the pressure not greater than on the other valve, is that the lock up valve may be the first to open, and so by its frequent action, the engineer may know whether it is in working order. This regulation was more necessary before than

it is now, at first lock up valves were so put out of the control of the engineer, that he could neither turn them nor "ease" them when steam was up. "To be out of the control of the engineer" is now very properly interpreted to be in every respect, except overloading, quite under the engineer's control, to turn them about on their seat, or to lift them by hand as required.

The Act indicates the minimum of area of the valve as that which manufacturers had found to be sufficient for the purpose. It was to be not less than the ordinary valve, a common rule was half an inch of valve area to a foot firegrate, and the Board did not make a rule to hamper a changing industry, but they permitted their surveyors to approve of what the manufacturers had themselves found to be satisfactory.

For steamers large safety valves for high pressures, and loaded with weights, are open to several objections. First, when the vessel rolls, the valve spindle is inclined, and the effective load is reduced just in the proportion that the vertical height of the inclined spindle is less than that of its height when upright. If the pressure of steam carried is near to the loaded pressure, there is a wasteful loss of steam when the vessel is lying over.

Second, when the vessel is pitching, the effective loading of valve is increased when that part of the vessel containing the boiler is describing the lower half of its pitching movement and it is diminished while the upper half of that movement is being described. Place a weight on the palm of your hand, raise and lower it, and you will perceive the difference of load. And so does the steam, for the rising and falling of the vessel changes the safety valve into a pump, again wastefully discharging steam into the atmosphere.

Thirdly, it is difficult to keep a safety valve in good order when there is half a ton of weights on it. The valve must necessarily be free in its seat, and every roll the weights move the valve a little to that side, and then back to the other side, wearing the face unequally.

Fourthly, the half ton of weights piled on the top of the safety valve in a locked up casing, sometimes necessarily in a not very accessible corner, renders inspection difficult, and "touching up" often unsatisfactory.

These drawbacks have been felt from the first, but while the pressures were only about fifteen pounds per square inch, they were borne without much complaining. Pressures are now getting on to the hundred pounds, and with increasing pressure these inconveniences have grown to be serious evils.

The remedy for the safety valve difficulty has been sought in five directions.

First. The number of safety valves has been in some cases reduced, it having been found that keeping one valve in order is less expense than maintaining two of half the area each. Even in passenger steamers now, sometimes a large single boiler, carrying high pressure, has only one safety valve.

Second. Instead of having an ordinary in addition to the lock up valve, the required area of valve for each boiler has been put into two lock up valves, but so constructed that they can be "eased" or lifted, only not loaded when steam is up.

Third. The prescribed total amount of valve area has been called in question, as being unnecessarily large for high pressures, it being admitted that steam of high pressure will escape through the same opening faster than steam of a lower pressure.

Fourth. Instead of direct loading, indirect by lever and smaller weight has been introduced.

Fifth. The Board of Trade have been asked to allow springs to be substituted for the dead weights in the loading of locked up safety valves.

I will dispose of the first and second of these plans by saying that I consider the first as hazardous, and the second as quite justifiable. My present object is to deal with the 3rd, 4th, and 5th of these proposed remedies. I purpose as far as I can to thoroughly discuss the subject in all its aspects, and for the first time, I believe, to expose the behaviour of escaping steam. I will endeavour to write what I have to say in sentences, or to exhibit it in diagrams, instead of condensing it into formulæ. But some parts of the subject can be explained only by the use of the higher mathematics, I will do what I can to put these in their simplest form, and should any reader, really anxious to follow me, come to a dead lock, if he writes to me I will try to remove the obstacle.

THE AREA OF SAFETY VALVES.

The manufacturers' rule at present is half an inch to one foot of firegrate. What relation is there between that and the physical requirements of the case?

Evidently the first step brings us to this, that half an inch of area of valve has to give free escape to all the steam that can be raised from the consumption on one square foot of firegrate. What is that consumption? For our purpose I will take a high, but not uncommon rate of consumption 24 pounds of coal per hour per square foot of firegrate. For the steam raised, say ten pounds of steam per pound of coal. This might be too high were we dealing

with probable efficiency of fuel as steam in the engine, but in our case we have to deduct no losses.

We have then, 240 pounds of steam per hour to pass through an half-inch area of valve. But we will find it more manageable to deal with one second only, and that will be $\frac{3}{10}\%$ = $\frac{1}{15}$ th of a pound of steam per square foot per second, or 4 lbs. per minute. (In round numbers we may remember that from each foot of fire-grate there can be raised one ounce of steam per second.)

We know then how fast we can make the steam, we must find out now how fast we can get rid of it. I have further on deduced from Joule's equivalent the formulæ I must now use. The first is, that the weight of common dry steam that will pass through an opening one square inch area is when the steam is above eleven pounds pressure, $W = \frac{P \cdot 9705}{60 \cdot 946}$. For steam of 100 pounds pressure

above zero, this gives $W = \frac{P}{69 \cdot 815}$. For 50 pounds it gives a divisor 68.40, and for 200 pounds pressure it gives 71.256. Or say for any pressure above 26 pounds, that is 11 lb. above the atmosphere, the weight of steam escaping per square inch of opening per second is one-seventieth of the gross pressure of the steam in boiler in pounds per square inch. This divisor has been also arrived at by Professor Rankine as a deduction from an independent investigation. For the true principles of the escape of steam we are indebted to Mr. R. D. Napier's experiments, which I will discuss in detail in my treatment of this subject.

Steam of 55 lbs. by guage is $55 + 15 = 70$ lbs. pressure above zero, and as it is always the total pressure which has to be dealt with in discussing the properties of steam, we find that from this pressure one pound of steam per second ($W = \frac{P}{70} = \frac{55 + 15}{70} = 1$) will pass through an opening of one inch area in one second. Through the half inch allowed per foot of firegrate there will escape $\frac{P}{140}$ per second. If the steam be 55 pounds by guage, that will be half a pound of steam per second. But for every half inch of valve there is only one foot of firegrate, and only one-fifteenth of a pound of steam per second. The half inch opening is therefore not required, and most certainly will never be used, the valve will, in this case, never open further than to $\frac{1}{15}$ ths of the prescribed area. For a general expression we have this. The proportion of full area to which the valve will open to allow all the steam to escape will be

$$= \frac{\text{The steam raised per second per foot}}{\text{The steam escaping per second per half-inch}} = \frac{1}{15} \div \frac{P}{140} = \frac{9\frac{1}{2}}{P}$$

For steam 78 lb. by guage we have the area of opening
 $= \frac{9\frac{1}{2}}{78 + 15} = \frac{1}{10}$ th of the area of the valve, and for steam 32 lb.

by guage we have the area of opening $= \frac{9\frac{1}{2}}{32 + 15} = \frac{1}{5}$ th of the
 area of valve. When a valve opens (not *lifts*, but *opens*) one-
 fourth of its diameter the area of opening is equal to the area of
 valve. This happens because the area of a circle is the circum-
 ference multiplied by half the radius, which is, of course, equivalent
 to an opening all round the circumference, and of a breadth equal
 to one-fourth of the diameter. Our expression $\frac{9\frac{1}{2}}{P}$ is a fraction, say

one-fifth or one-tenth. If then we multiply $\frac{D}{4}$ by this fraction,
 we will get the breadth of opening really necessary to allow the
 steam to escape. It will be $\frac{D}{4} \times \frac{9\frac{1}{2}}{P} = \frac{2\frac{1}{4} D}{P}$.

This is *opening* not lift. Safety valves are generally made with
 conical bearing surfaces, bevelled to 45°, for these the lift is to the
 opening as *ten to seven*, therefore $\frac{2\frac{1}{4} D}{P} \times \frac{10}{7} = \frac{10 D}{3 P}$ is the lift
 required. For example, a valve 3" diameter for steam 85 lbs. by
 guage would have to lift $\frac{10}{3} \times \frac{3}{85 + 15} = \frac{10}{100} =$ one-tenth of an
 inch to allow the steam to escape as fast as it could be produced.
 Of course I mean that the valve has one half inch of area for each
 square foot of firegrate.

This seems to be a very small lift, and it is this fact which has
 led to the proposal to reduce the area allowed, and to use a greater
 range of lift.

Safety valves are intended not only to allow the steam to escape
 as fast as it is made, but to do so without allowing of any material
 increase of the pressure in the boiler beyond that for which the
 valve is loaded. It is evident that to lift the valve at all, the
 internal pressure must exceed the pressure of load. To what
 extent will that excess reach when the safety valve has opened
 $\frac{2\frac{1}{4} D}{P}$, or if conical has lift $\frac{10 D}{3 P}$?

This lift is that required under the most favourable conditions,
 with perfectly dry steam and with the best form of outlet.

It may be thought I am here a special pleader for small
 valves. I am stating the case as I find it, I think impartially, the
 above are theoretical deductions, and should be reconcileable with
 the following, a practical result.

I this day experimented on two factory boilers, connected. Total firegrate 26 square foot area, with four safety valves loaded by lever and weight in the common way to 51 lbs. pressure. Each valve is 3 inches diameter, and therefore the area of the valve is more than double the half-inch per foot of firegrate, being 28 sq. in. for 26 sq. ft. of firegrate. All the valves were in fair working order. Arranged to have good fires before the dinner hour.

1 p.m.	Pressure 48 lb.	Engine stopped.
1 h. 1 m.	„ 50 „	Safety valves all breathing.
1 „ 2 „	„ 51½ „	Valves all blowing.
1 „ 4 „	„ 55 „	Valves blowing strong.
1 „ 5 „	„ 58 „	Steam escaping prevents marking lift.
1 „ 7 „	„ 60 „	Can hardly see guage for steam.

Pressure was evidently still rising fast. We then opened the furnace doors, shut the dampers, eased one of the valves and started the engine to reduce the pressure.

1 h. 12 m.	Pressure 58 lb.	Steam clearing away.
1 „ 15 „	„ 50 „	Engine working.

The impression made upon all present is that these boilers have not too much area of valve. Had we taken out the levers and pins and carefully cleaned, eased, and oiled the joints, the result might have been different. But the trial was a fair one, the gear was in fair ordinary working order, and the valves worked about equally. There was no blast.

(To be continued.)

TRAINING SHIPS FOR BOYS FOR THE MERCHANT SERVICE.

A MAN or boy on board ship who is unacquainted with his duties is not only an impediment and a nuisance, but is a source of absolute danger. We appeal earnestly to masters and owners of British ships to do what they can to get good British seamen into their ships. There are plenty of boys who want employment. Begin with the boys and we must have good men. It is worth while for masters to put their shoulders to the wheel and secure employment for these boys. If we once get a supply of intelligent healthy boys, the discipline of the Mercantile Marine will be secured, and expense and desertion will decrease. The training ships can supply boys who already know much of their work, and who, on account of their habits of cleanliness and ready obedience, as well as their knowledge, are of great value. If our readers who are connected with ships will, when they want a boy or an apprentice to the sea service, give the training ships a call, they will probably find

such a boy as they want. We cannot too emphatically call attention to these valuable institutions. A list is given of them further on. We only have to make one suggestion, and that is, that these boys are generally valuable in proportion to their age. If a trained boy of sixteen can be got, we would say, take him in preference to one much younger; but take a trained boy at any age in preference to an untrained one.

Since writing the above we have received the following letter from Captain Pocock, R.N., of the training ship *Wellesley*, and although we have many demands on our space, we have great pleasure in printing it. We commend it to our readers as from the pen of a practical sailor who is well acquainted with the subject on which he writes. In connection with this subject, we would ask our readers to peruse carefully the suggestions contained in our March number for 1871.

To the Editor of the Nautical Magazine.

"I gladly embrace the opportunity of saying something about training ships. They may claim to have succeeded in the difficult feat of killing two birds with one stone. They rescue the fatherless and destitute from a life of crime and misery, and supply the Mercantile Marine with seamen, solving two of the most difficult questions of the day.

"Comparing a floating with a shore school, a ship has many advantages. Naval discipline trains not only to obey but to command, its situation is surrounded by difficulties, sometimes dangers, which naturally and imperceptibly create self-reliance and confidence in one another. The exercise aloft, besides teaching practical seamanship, encourages activity and boldness, and trains the nervous system to encounter the emergencies of a life of danger. The whole life on board a ship is unconscious training for the sea. There can never be that dull sound of routine without break or change, while all around is subject to the influences of wind and water. For instance, our jolly boat manned by eight boys of about twelve years old and commanded by another of fourteen or fifteen, does the whole day duty of the ship—for the width of the harbour no other in the world can compare with the Tyne for traffic, yet in three years and a half we have never had an accident. At night a larger boat with an officer is out in all weathers with her red and green lights. Any moment of night or day the river Fire Engine may come alongside for her crew. Fire is a very tangible enemy to fight, and we have had some smart affairs. On one occasion, alongside a large barque in flames, our little lads pumped from 10.30 p.m. to 7.30 a.m. in ten minute spells, and then had another song for putting it out. Our last examination by the Government Inspector was after a night spent at a tremendous stack fire in Tyne Docks. The discipline of a shore school can never be put to such severe and practical tests as these. The training itself is better, because all trades are overstocked. At sea alone is there constant employment at good wages, and knotting, splicing, sailmaking, with the general handiness of a sailor, are useful in every calling. Several of our old hands were thrown out of work by the late strike and they immediately went to sea. We give them a second string to their bow.

“The demand in the Mercantile Marine is not for boys, but for young men well trained for the service, more especially in those branches of seamanship which since the introduction of steam can only be acquired on board a training ship. As far as age goes the reformatory ships can meet this demand, but since the increase of Industrial Schools, reformatories are becoming more and more exclusively criminal, and now that such efforts are being made for the improvement of merchant seamen, it is scarcely fair to supply it from such a source. The Industrial School and pauper training ships cannot retain the boys after sixteen years of age, and being generally of stunted growth, they are not so acceptable to masters of vessels as those from the ships supported by voluntary contributions. The governors of the latter institutions having raised the standard of age and stature, have now no difficulty in finding situations for their boys. The Industrial Schools' Act was never intended for training ships, and turns the boy adrift just when his training for a sea life ought to commence. Its intention is for the prevention of crime by removing boys under fourteen years of age from evil influences, but after that age the only chance for them is a committal to prison and a reformatory, which, as mentioned above, is becoming what it ought to be—exclusively criminal. An Act of Parliament to enable justices to send such boys to a training ship for two or three years would be a most beneficial measure, as it would save these poor fellows from being demoralised by becoming acquainted with prison life, and would draw recruits from all parts of the kingdom, instead of, as at present, only from the neighbourhood of a few seaport towns. What may be done in this direction may be judged by the following:—Some time ago we received vagrants over fourteen (the limit of age for the Industrial School) recommended by the police or the superintendents of shipping offices; they were washed and fed for a few days and then sent to sea, their advance being properly invested in outfit. Out of fifteen, four have several times come back to us, respectably dressed and prosperous—an experiment that shows what an immense amount of vagrancy may be prevented by giving a lad a helping hand at the right moment. With a view to supplying older and bigger lads the committee of the *Wellesley* have just decided to receive boys of any age on the payment of £20 a year by charitable people, also youths belonging to any class of society whose friends desire to place them under strict discipline on the same terms. All boys not sent by the magistrates must be bound apprentice to the Captain Superintendent.

“In sending our boys to sea, our experience as yet is not great, but on the whole very satisfactory. At the present moment only one of our old hands gives me any serious anxiety. Several have broken their indentures, and are now able seamen. The difficulty of getting apprentices to serve their time is notorious, and greatly enhanced when a boy finds himself with more knowledge of his profession than many able seamen receiving £3 a month. But this is the fault of the system which places such great temptation in his path.

“If, as seems pretty generally agreed, training ships are to be our nursery for seamen, the merchant service must be adapted to the change. I think it quite clear that the present system of ordinary seamen and apprentices does not work well; as long as a labourer can get £1 or £1 10s. a month as an ordinary seaman, it is not to be expected that trained lads will serve four years for £40. If training ships could, by a modification of the Industrial Schools' Act, retain lads from two to four years, according to their attainments in school, and turn them out at eighteen or nineteen into the second class Royal Naval

Reserve in which they are required to serve two or three years, in a few years we should separate the sailors from the sea labourers, who might be rated as landsmen, and organize a really efficient reserve for the Royal Navy in case of war. What these recruits would be may be seen on board the *Chichester* and *Warspite*, in my opinion but little inferior to those for the Navy. Boys are now sent to Industrial School ships at ten years old for six years, which is waste of money and interferes greatly with the efficient training of the older boys; it would not cost more if the age of entry were, say, between thirteen and seventeen, and the term four years, but none to be kept after nineteen, or after they are efficient. The removal of some thousands of such lads from evil influences would confer a great benefit on society.

"I remain, etc.,

"C. A. B. POCOCK, Commander, R.N.

"*Wellesley*, S. Shields, Dec. 20th, 1871."

TRAINING SHIPS FOR BOYS FOR THE MERCHANT SERVICE.

Names of Ships.	Where Stationed.	Boys on Board about
<i>Akbar</i> , Reformatory	Liverpool	200
<i>Chichester</i> , Voluntary Subscriptions	Greenhithe, Kent	200
<i>Clarence</i> , Roman Catholic Reformatory	River Mersey	200
<i>Conway</i> , for Officers	Liverpool	
<i>Cornwall</i> , Reformatory	Purfleet	300
<i>Cumberland</i> , Industrial School	Glasgow	300
<i>Formidable</i> , Industrial School	Bristol, Portishead	300
<i>Gibraltar</i> , Industrial School	Belfast	
<i>Goliath</i> , Forest Gate District Pauper School	Grays	500
<i>Havannah</i> , Industrial School on Shore	Cardiff	100
<i>Indefatigable</i> , Voluntary Subscriptions	River Mersey	200
<i>Mars</i> , Industrial School	River Tay	300
<i>Southampton</i> , Industrial School	Hull	200
<i>Warspite</i> , Marine Society's Ship	Woolwich	200
<i>Wellesley</i> , Industrial School	Shields	240
<i>Worcester</i> , for Officers	Southend	

THE SAILORS OF SMOLLETT.

By AUSTIN DOBSON.

(FIRST PAPER.)

THE sailor of the old school, familiar to our forefathers in the earlier half of the last century, is now historical. Few, indeed, would recognize any affinity between the trim-whiskered, highly-trained

naval officer of our day, and the sturdy, surly, uncivilizable "tarpaulin," who sailed with Anson in the *Centurion*, or scrambled up the batteries at Porto Bello. He, and his cudgel,—his manners and his costume, are wholly strange to us. Take, for example, this description of the shore-going make-up of an ordinary "sea lieutenant," *circa* 1740, when Vernon's head was on all the sign boards, and every cobbler and barber (as we may see in Hogarth's prints) had something to say about the brilliant doings in the West Indies of that highly popular admiral. "His dress," says the record, "consisted of a soldier's coat, altered for him by the ship's tailor, a striped flannel jacket, a pair of red breeches, japanned with pitch, clean grey worsted stockings, large silver buckles that covered three-fourths of his shoes, a silver laced hat whose crown overlooked the brims about an inch and a half, a black bob-wig in buckle, a check shirt, a silk handkerchief, an hanger with a brass handle girded to his thigh by a tarnished laced belt, and a good oak plant under his arm."

So much for his outward appearance. His general character was of a piece with it. Living chiefly on ship-board, he was little acquainted with the habits of landmen. What slender education he had received as a boy in the Portsmouth or Woolwich academy, he had probably forgotten in the gunner's mess during the days of his probation there. As a navigator, he was practical rather than scientific. "His hand was more familiar with the tar brush than with Hadley's Quadrant."* He regarded the contemporary improvements in navigation as the daydream of fresh water theorists, unacquainted with sea going requirements. His language was an uncouth sea-jargon; he swore almost as "terribly" as, according to "my uncle Toby," the army did in Flanders; and he expectorated as lavishly as the most national of modern Yankees. His accomplishments were confined, in all likelihood, to drinking egg flip, rumbo, and burnt brandy, dancing a hornpipe and singing—

"A careless tavern-catch,
Of Moll and Meg, and strange experiences,
Unmeet for ladies."

His feminine ideals were "Kate Coddie, of Chatham," and "Buxom Joan, of Deptford." In fisticuffs, or the management of the aforementioned oak plant, he had a reasonable proficiency, acquired by visits to the booths of Bartholomew Fair, or the establishment of Mr. Broughton, the prizefighter, in the Tottenham Court Road. He was simple and generous, brave and superstitious. His heart was in the right place, but his manners were nowhere.

* Thackeray's Posthumous Notes for "Denis Duval."

Indeed, in 1755, we find one of the numerous Essayists (a finical gentleman, perhaps, and, it may be, somewhat disposed to be over-fastidious) devoting a special article to the unpolished behaviour of the gentlemen of the navy. From him it may be gathered, that it was not unusual "for an Admiral to behave as rudely as a swabber, or a Commodore to be as foul-mouthed as a Boatswain." By this time, in the well-worn words of Molière, "*nous avons changé tout cela.*"

To Smollett we owe the completest, if not the only picture of this passed-away type of seaman. No one was better qualified to preserve it, for in addition to the keen perception of men's "humours," which belonged to him pre-eminently as a writer, he had the special advantage of a practical acquaintance with the seafaring profession. In his younger days, he had served as a surgeon's mate in the calamitous expedition to Carthage, in 1741, the mishaps and mis-calculations of which he has recounted, with bitter raillery, in the first volume of "Roderick Random." According to Campbell, his forcible narration of the discomforts of a naval life had the effect of rousing the sluggish authorities at the Navy Office to certain very salutary reforms in the internal economy of King George's ships of war. But for us the supreme result of his marine experiences is to be found in the group of sea characters contained in his fictions—characters which, in the words of Sir Walter Scott, "are described with such truth and spirit of determination, that, whoever has undertaken the same task, has seemed to copy more from Smollett than from nature." The words are as true now as when they were penned. Let any one who cares to verify them, contrast Tom Bowling's efforts to obtain justice for his nephew, (as hereafter referred to) with the account in "Dombey and Son" of Captain Cuttle's equally well meant, but equally injudicious interviews with Mr. Carker, the manager, on the subject of Walter Gay. "Roderick Random," "Peregrine Pickle," and "Humphrey Clinker," were the favourite books of the child David Copperfield, and we know now (thanks to Mr. Forster) that the child David Copperfield was the child Charles Dickens.

It will be sufficient in this paper, to confine our attention to the Tom Bowling of "Roderick Random," and the famous trio of "Peregrine Pickle,"—Trunnion, Hatchway, and Pipes. Not that the minor characters are less surely or less effectively conceived. Crowe, the impetuous merchant captain of "Sir Launcelot Greaves," would be more than remarkable, had he been the first instead of the latest sailor creation of the author. Tom Bowling's messmate, Jack Rattlin, is equally good, as are also the martinet-captain, Oakum,

and the fop-captain, Whiffle, both of whom were drawn from well-known originals. Morgan, the Welsh surgeon's mate, bating the fact that he somewhat resembles the Dr. Caius of "The Merry Wives of Windsor" is excellent; but it is scarcely fair to rank him among the sailors.

As Tom Bowling's was the first portrait, so it is the freshest and happiest of the gallery. To the public it was wholly novel, for since, and indeed previous to Congreve's sketch of the nautical Ben Legend, in "Love for Love," nothing of the kind had come before it. It is true that the heroes of Swift's and Defoe's masterpieces were seamen. But Captain Lemuel Gulliver, of Rotherhithe, and Robinson Crusoe, of York, mariner, are sailors, more on account of the necessities of a scheme involving travel and adventure, than from any intention on the part of their respective inventors to present accurate marine portraits. Tom Bowling's is such a portrait, thrown off with careless ease, yet impressed with the stamp of its fidelity to nature. It seems clear that the author attached no greater importance to it than any other character in the book. In his later works, when the popularity of this one impersonation had imposed new creations in the same vein upon him, he extended the outline and deepened the features of his model, and his characters gaining in humour lost in naturalness. Hence while Trunnion and his supporters are more elaborate than Tom Bowling, they must be regarded as nautical eccentrics, rather than ordinary sailors.

Tom Bowling is the ordinary naval officer of Smollett's time. His costume has already been described. To complete his portrait it is only necessary to add that "he was a strong-built man somewhat bandy-legged, with a neck like that of a bull, and a face which (you might easily perceive) had withstood the most obstinate assaults of the weather." When we first make his acquaintance he is about to embark upon an enterprise to which, as it requires some shore-going diplomacy, he is not in the least suited. This is no other than to prevail upon a rigid old judge to make some fitting provision for his neglected grandson, Roderick Random, the offspring of a *mésalliance* between the old gentleman's son and Bowling's sister. Arriving at the house with his nephew he is assailed by a couple of beagles; one of these he lames with his cudgel, the other with his hanger. After a colloquial passage of arms with their enraged young owner (the judge's heir) whom he recommends to "ware his gingerbread-work" or else he "will be foul of his quarter," and whose laced jacket he further engages to trim by rubbing it down with an oaken towel, he is admitted into the judge's presence, where, "after two or three sea bows," he delivers himself as follows:—

"Your servant, your servant,—what cheer, father? what cheer?—I suppose you don't know me—mayhap you don't—My name is Tom Bowling,—and this here boy, you look as if you did not know him neither,—'tis like you mayn't—He's new rigged, i'faith, (alluding to the suit in which he had equipped his charge) his cloth don't shake in the wind so much as it wont to do. 'Tis my nephew, d'ye see, Roderick Random—your own flesh and blood, old gentleman. Don't lag astern, you dog (pulling me forward). My grandfather (who was laid up with the gout) received this relation, after his long absence, with that coldness of civility which was peculiar to him; told him he was glad to see him, and desired him to sit down,"—"thank ye, sir, thank ye, I had as lief stand, (said my uncle) for my own part I desire nothing of you; but if you have any conscience at all, do something for this poor boy, who has been used at a very unchristian rate. Unchristian do I call it?—I am sure the Moors in Barbary have more humanity than to leave their little ones to want. I would fain know why my sister's son is more neglected than that fair-weather Jack," (pointing to the young squire, who with the rest of my cousins had followed us into the room). Is he not as near akin to you as the other? Is he not much handsomer and better built than that great chuckle-head?—Come, come, consider, old gentleman, you are going in a short time to give an account of your evil actions. Remember the wrongs you did his father, and make all the satisfaction in your power before it be too late."

This plain-spoken address produced no effect except to excite the chorus of cousins against the "scurvy companion, the saucy tarpaulin," who dared to prescribe to their relation. The judge rejoins drily with counter-charges of idleness on the boy's part, refers to the fact that his chaplain's teeth have been knocked out by a stone from the hand of this young marksman, and offers to bind him apprentice to a tradesman.

At this proposal, Mr. Bowling's indignation fairly boils over. If the judge has sent the lad to school he has neglected him so much that it is not to be wondered at if he has made small progress. But this he denies, stigmatizing the old gentleman's informant as a "lying lubberly rascal who deserves to be keel-hauled, for though he (the lieutenant) does not understand these matters himself, he is well informed as how his nephew is the best scholar of his age, in all the country." This statement he offers to maintain by proposing to lay a wager of his whole half-year's pay, on the boy's head, pulling out his purse and challenging the company accordingly. Neither, says he "is he predicted to vice," but rather left like a wreck to the mercy of the wind and weather by his grandfather's neglect. As to the disfigured chaplain, he deserved what he got and if he (Tom Bowling) ever came up with him, he had better be in Greenland. They would bind the boy to a tradesman, would they? Make a tailor of him, he supposed. He would rather see him hanged. So, after commanding his nephew to tack about, he takes

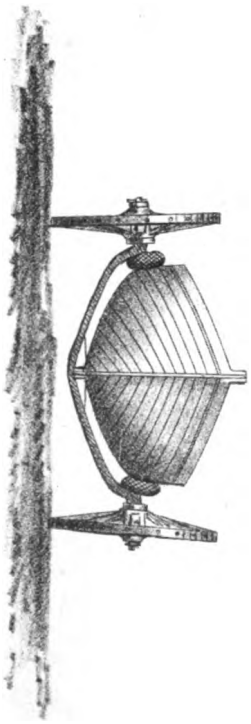
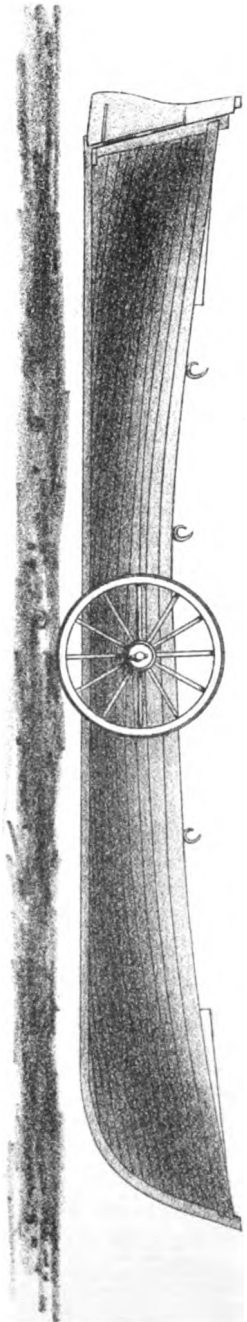
his leave, informing the judge that he is bound for the other world and that he considers him very ill-provided for the voyage.

Shortly after this ineffectual visit, the old judge is really declared to be dying, and Rory and his uncle are summoned to his bedside. The summons is obeyed by Mr. Bowling with much satisfaction, as he attributes it entirely to the effect of his timely admonitions, and is of opinion that "the old hulk is brought up at last." He soliloquizes over the sinking invalid on this wise:—

"What! he's not a-weigh.—How fare ye—how fare ye, old gentleman?—Lord, have mercy upon your poor sinful soul." * * * * * "Here's poor Rory come to see you before you die, and receive your blessing. What, man! don't despair, you have been a great sinner, 'tis true, what then? There's a righteous Judge above, an't there?—he minds me no more than a porpuss. Yes, yes, he's agoing,—the land crabs will have him, I see that; his anchor's a-peak, i'faith." [This "homely consolation" leads to the speaker's expulsion from the sick-room, to which he is presently recalled by the judge's death.] "Odds fish! now my dream is out for all the world (says he), I thought I stood upon the forecastle, and saw a parcel of carrion crows foul of a dead shark that floated alongside, and the devil perching on our sprit-sail yard, in the likeness of a blue bear—who, d'ye see, jumped overboard upon the carcase, and carried it to the bottom in his claws."

Another attempt is made to eject him after he has delivered himself of the foregoing elegy; but this time the sturdy tar lugs out in his own defence, and swears that he will turn out for no man until such time as he knew who had a title to send him adrift. "None of your tricks upon travellers, mayhap old Buff has left my kinsman here his heir. If he has 'twill be the better for his miserable soul. I desire no better news—I'd soon make him a clear ship, I warrant you." He is pacified by promises on the part of the executors, that justice shall be done to his nephew, but when the will is read, to the chagrin of Mr. Bowling, who has been sucking his cudgel-head, there is nothing for Rory, and after some quaint anathemas against the "old succubus," whose soul he consigns to certain unmentionable latitudes, he again directs his chargo to 'bout ship and steer another course.

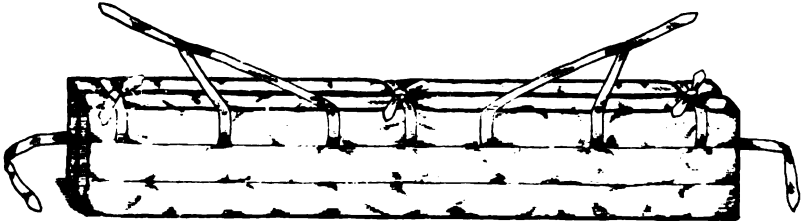
His balked and ferocious benevolence subsequently finds a vent in the castigation of the village schoolmaster, who has used his nephew with great brutality. After having in his own words played this worthy man a salt-water trick, by bringing him to the gangway and anointing him with a round dozen doubled, from an extemporized cat-o'-nine-tails, he bids a final good bye to his young kinsman, whom he leaves boarding at the house of an apothecary, and provided with the necessary funds for his support and education.



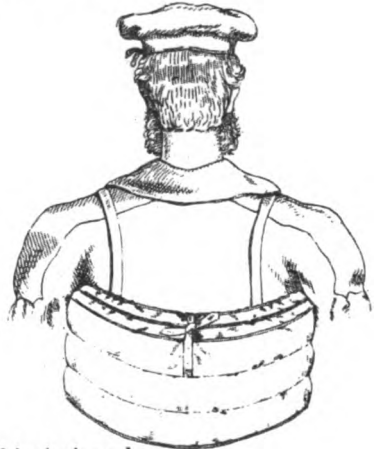
*A 27 Feet Life Whale Boat on wheels
as now built & furnished for Coast Guard.*



No. 1. Burt's Patent Cork Mattress and Pillow.



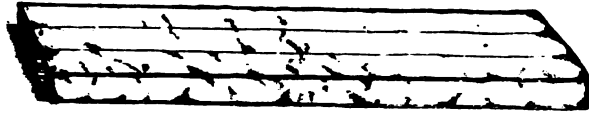
No. 2 — Mattress folded ready for use as a Life Preserver.



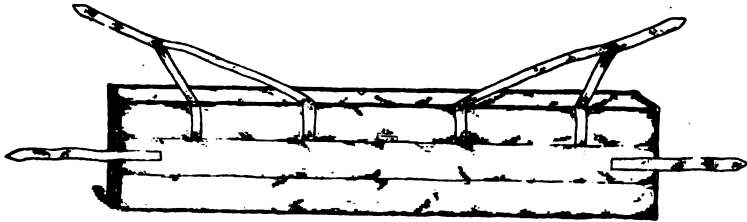
No 3 & 4.— Front and back view when on.



No. 5.— Section of Mattress—end view.



No. 6. — Yacht Seat or Cushion.



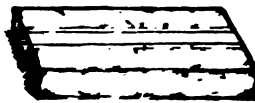
No. 7. — Reverse side, showing straps.



No. 8. — Front view when on.



No. 10. — Two Pillows, forming a Life Belt.



No. 9. — Pillow, with strap across.

The next news of Lieutenant Bowling is conveyed in the following characteristic letter:—

“To MR. ROGER POTION.

“SIR,—This is to let you know that I have quitted the *Thunder* man-of-war; being obliged to sheer off, for killing my Captain, which I did fairly on the beach at Cape Tiberoon, in the island of Hispaniola; having received his fire and returned it, which went through his body; and I would serve the best man so that ever stept between stem and stern, if so be that he struck me, as Captain Oakum did. I am (thank God) safe among the French, who are very civil though I don't understand their lingo, and I hope to be restored in a little time for all the great friends and parliamentary interest of the Captain, for I have sent over to my landlord in Deal, an account of the whole affair, with our bearings and distances while we were engaged, whereby I have desired him to lay it before His Majesty, who (God bless him) will not suffer an honest tar to be wronged. My love to your spouse, and am,

“Your loving friend,

“And servant to command, while

“THOMAS BOWLING.”

The apothecary of course, at once declines the responsibility of maintaining young Random, who, at this point, begins life on his own account. Later in the book, when he is himself a surgeon's mate on board the *Thunder*, he learns from a certain Jack Rattlin some additional particulars of his uncle's mishap. The lieutenant, whom his messmate eulogizes for as “brave a fellow as ever cracked a biscuit,” had, while the vessel was lying off Hispaniola, sighted three lights in the offing. Thereupon he ran down and waked Captain Oakum who lay in the great cabin asleep. “This put him,” says Jack, “in a main high passion,” and he swore woundily at the lieutenant, calling him “swab and lubber,” whereby the lieutenant returned the salute, and they jawed together fore and aft a good spell, till at last the Captain turned out and laying hold of a rattan came athwart Mr. Bowling's quarter. Whereby he told the Captain that if he was not his commander he would heave him overboard, and demanded satisfaction ashore.” By the aid of sundry other “wherebys,” Jack Rattlin makes shift to complete the lieutenant's story as we know it, ending with the recovery of the commander, whose wound, it appears, had not been mortal.

Roderick subsequently finds his uncle in great distress at Boulogne. It has been banyan day with him some time, he says. Not daring to return to England on account of the supposed death of Oakum, he had been serving as a foremast man in Monsieur d'Antin's squadron, had quitted the French service from scruples of conscience, and in returning to Europe been cast away on the French coast, where being too proud to beg like the Dutchman

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with whom he has been shipwrecked, he is well-nigh starving. Upon hearing that Captain Oakum is still alive, he at once decides to return to London, where he informs his nephew he has great prospects of retrieving his fortunes. "For," says he, "the beadle of the Admiralty is my good friend, and he and one of the under clerks are sworn brothers, and that under clerk has a good deal to say with one of the upper clerks, who is very well known to the under secretary, who upon his recommendation, I hope, will recommend my affair to the first secretary, and he, again, will speak to one of the Lords on my behalf, so that you see I do not want friends to assist me on occasion." It is perhaps scarcely necessary to add that the sanguine sailor profits nothing by this ingenious step-ladder to preferment. He is last heard of as the prosperous captain of an armed merchant ship—a not unprofitable calling in those days of letters of marque.

(To be continued.)

METEOROLOGY, WINDS, TIDES, AND CURRENTS IN THE WESTERN PART OF THE MEDITERRANEAN.

By CAPTAIN GIOV. S. D'ANCONAS,
Of the Italian Navy.

GIBRALTAR STRAIT AND CHANNEL OF SPAIN. CHANNEL BETWEEN
SARDINIA AND AFRICA, AND CHANNEL OF MALTA.

ON the space of sea between Gibraltar and Cape Palos, the barometer, although it shows the good and bad weather with the winds from the westward, gives not any warning from whence you can expect the wind to come, nor the sort of weather to be anticipated; because with the glass standing at 30·35, we had heavy gales, nearly storms of wind from eastward and north-eastward, sometimes with rain and very bad weather, and sometimes with clear sky. In January, 1866, from Iviza to Spartel, on the 24th, 25th, and 26th, we had the wind at north-east from 10 to 11, the glass at 30·25 to 30·34; the sky was clear but very thick at the horizon, so much so

that at night from the 25th to 26th, some ships ran on shore on both sides of the Strait, and we sighted Gibraltar light only ten minutes before entering the Strait, from the foreyard, as she was invisible from deck till we came opposite the Europa point.

Sometimes in this space of sea with the barometer under 29·25, weather cloudy, you will meet light and variable winds; a circumstance which must depend upon the conformation of the land, which alters the direction and force of the winds.

Being under Gibraltar or Ceuta, or at anchor in the bays, with winds westerly, moderate fine weather, and the glass standing at 30·20 to 30·35, these winds will be moderate, because in open sea the winds will be from the fourth or first quarter of the compass. In such cases you may expect from morning till evening a change of wind from west to east in the Strait (although usually those changes occur during the night); anyhow, in such circumstances, you may expect a change favourable for going through the Strait westward.

It will be different if the barometer is low, say under 29·95, because then the winds in the Atlantic blowing from the third quarter of the compass, come straight into the Mediterranean, bringing a heavy sea, and are usually of long continuance, as it will be seen on the tables of Meteorological Observations made in different circumstances; it has been also observed that with the glass unusually low, say 29·90 and less, in the Atlantic, the winds ought to be from the south, south-south-east, or south-south-west; in such cases often the wind shifts for a while to south-east and east through the Strait, with rain and close dirty weather, and frequently ships go through—at least those which are under Cape Spartel—but after a few hours the wind shifts again to south-west and westward, with heavy squalls and bad weather.

In the vicinity of the Strait, or at anchor in the bays, with moderate westerly breeze, the glass standing at about 30·20 it has been often remarked that a shift of wind from west to east is foretold by a fall of 4·6 of an inch of the mercury in twenty-four hours; and usually it will be seen that the day before the change of wind takes place, in the afternoon the westerly wind has a tendency more southerly than usual, turning out as a sea breeze, and the temperature is usually warmer the day before the change of wind from west to east occurs in the Strait.

For other useful knowledge to guess more exactly a change of wind and weather, see "Considerations Generales sur la Mer Mediterranèe," par M. A. Le Gras, Capitaine de Frigate *Officier de la Legion d'honneur*.

Bad weather so as to endanger the safety of a vessel is very rare round Gibraltar, although it occasionally happens.

Of a gale of some duration in the month of February, 1870, we give the following details:—On the 11th, 12th, and 13th we were cruising round Gibraltar, about 200 ships, with bad and unsettled weather, wind variable from the third quarter of the compass between south and south-south-west, the glass was half an inch lower of the sign variable, say 29·46 (the lowest reading ever had in the Mediterranean after over six years of observations); some ships were close to Ceuta, a few, who possibly could, went through the Strait westward, but nearly all were compelled to put back in the Mediterranean through stress of weather, and many of them with damage, the weather being so bad and threatening, that it was prudent to keep under sail rather than anchor in one of the bays. The weather was stormy and unsettled for many days, but on the 18th, the second day after full moon, a shift of wind from south-east of short duration allowed a convoy of over 300 sail to go through the Strait.

It is observed that it was the second day after full moon, because usually it has been remarked that in the Strait, the second or third day after full or change of the moon the winds have a tendency from eastward, and nearly always when we have been detained here by contrary winds, we got wind easterly the day of full and change, or on the two days afterwards.

On the 12th and 13th, the wind came in sudden and heavy gusts from south and south-west, with intervals of calm, rainy and dirty weather; and we considered that in the vicinity it must have been stormy weather, but that the coast of Africa impeded the storm from entering the Mediterranean,—a storm from south to south-west, which must have been strong outside the Strait.

On the remaining portion of the Channel of Spain, and in the vicinity of Cape Gata, it has been also remarked that a fall in the mercury is often a prognostication of a change of wind from westward to eastward. On the 10th of February, 1870, although the glass fell 0·12 inch the first twelve hours, and subsequently 0·13 in the second twelve hours, and was continually falling, the wind took at east, but south-east, a circumstance probably depending upon the conformation of the land, and the degree of heat of the same in relation with the temperature of the sea.

However, it will be observed, that with the wind westerly and the glass higher than thirty inches, this wind will never be of more force than 5 to 6, when under 29·95 the same wind can increase to 9 and 10 and more, and with wind easterly, the mercury standing

at 30·30 and higher, the wind can increase to a real storm, and sometimes with drizzling rain.

All or nearly all the shifts of wind from east to west in this navigation, towards the Island of Sardinia, happen from left to right, going the same way as the hands of a watch; by this every one will understand that when season and circumstances permit, it will be preferable to keep on short tacks near the coast of Africa when bearing eastward, for getting sooner a fair wind and making better tacks, but not so in coming from Sardinia towards Gibraltar, because it has been observed, oftentimes, that along the coast of Africa, although the winds prevail easterly, they are too light, so that ships sailing sixty or more miles to the northward of this coast, get sooner through, with fresher breezes from north and north-east.

From Cape Palos towards the Balearic Islands, you may depend more upon the state of the barometer to judge the wind and weather to come; however, here also you sometimes get dangerous gales from north-east (real storms of long duration) with dirty weather, rain, lightning (weather about the same as in the Adriatic with southerly winds in autumn). With the aforesaid bad weather the glass ranges about 30·20 and higher, and usually the bad weather in this place from that quarter comes without any warning of the Meteorological instruments.

The 29th of October in the proximity of Algiers, sailing eastward, with moderate north-north-east wind, the glass at 30·13 steady, stationary, likewise all other meteorological instruments; but the appearance on the fourth and first quarter of the compass was heavy and squally; on the same evening with a squall, the wind took the north-east quarter (true), compelling us to wear ship on starboard tack, being close to land (Africa); the wind was gradually increasing, and sail was reduced. On the afternoon of the 30th we were compelled to take in the foresail, and so continuing our starboard tack we were able to fetch under the very good shelter of Formentera and Iviza, but the storm increasing we were driven to sea for two days, driving towards Cape Palos under close reefed topsails and storm staysail, the only sails which could be exposed to the storm.

Under these circumstances I saw that under the lee of Formentera island could be got a very good anchorage, and in suitable depth of water, and which I would recommend to every one caught in the vicinity with gales of wind from the north-east, because they are really of long continuance and strong.

During the continuance of the storm the glass was at the lowest, 30·06, and when it rose to 30·20 we were able to set the courses.

GULF OF LYONS.

The 5th and 6th of November, 1864, sailing from Sardinia towards Gibraltar with wind south-east, wind and weather unsettled and rather threatening, the barometer had been falling for 24 hours, till it reached 29·70; we kept all sails the weather permitted. On the morning of the 6th being about 60 miles south of Minorca the wind shifted to the north with mild appearance, and although the glass was still falling we set all sail, notwithstanding the glass fell between midnight and 8 a.m., 0·08, and 0·08 more from 8 to 10 o'clock; and in fact a few minutes after ten a dark cloud appeared on the northern horizon, with wind increasing so suddenly as to give us barely time to take in and furl all sail. In half an hour's time we were running with close reefed topsails and storm staysails at the rate of 10 knots per hour with wind north, steering west for a while, being later on obliged to alter the course as it was impossible to keep the sea at the broad-side.

It is probable that perhaps without observing attentively the glass, we had avoided damage, a thing which we doubt much, because the appearance of the weather was fine, and certainly we should not have been so anxious to take in sail at the first appearance of a cloud, if we had not been warned by the sudden falling of the glass.

Every one is aware that sometimes with the worst appearances we are deceived; and sometimes without any indication in the atmosphere, only the barometer foretells a change of weather for the worse, for which, certainly, the sails are neither taken in nor shortened, but is always a useful warning; because in many ports or roads ships cannot be properly moored or secured in time, and it is preferable to wait for bad weather properly secured, although it does not come, than to be surprised by it improperly secured. In the port of Alexandria, vessels moored with short chains if caught with bad weather, foul in the impossibility of paying more cable, so causing damage to themselves and to others who are properly moored.

(To be continued).

CHLORALUM.

BY PROFESSOR GAMGEE.

PURIFICATION by fire and water for the prevention of disease is one of the most simple, as it is the most ancient of sanitary injunctions. We cannot trace the early history of disinfection by medicinal agents, advocated by the wise men of old, and the virtues of which were handed down by tradition. To arrest the corruption of the dead was regarded as a wholesome practice for the living. Secret processes were practised, and even recorded in works which it is said were destroyed with the temples and libraries of the Egyptians during the invasions by Persians, Ethiopians, and Romans. Myrrh, cassia, and various perfumes were used in conjunction with bituminous substances so widely distributed throughout the East. The bodies were charged with tarry matters, and subjected to the action of an intense heat—a heat that dried and caused every tissue of the body to be penetrated with the odour and certain principles of tars. The preservation of the dead by such a process doubtless suggested the burning of tar and various kinds of fumigation to ward off pestilence, and from using at first the simple preserving agent itself the disgusting practice afterwards arose of prescribing *mummy*. The mummy of the Arabians has been described as “a liquament or concreted liquor, obtained in sepulchres by exudation from carcasses embalmed with aloes, myrrh, and balsam.” Another kind of mummy was the Egyptian, which was “a liquament of carcasses seasoned with pissasphalt.” Mummy was probably the first antiseptic vaunted for the cure of ulcers, wounds, contusions, itch, and excoriations. The detergent effects of wood smoke and the fumes of burning sulphur were amongst the earliest observations of mankind, but the ceremony of fumigation was only a part of the performance practised by priests and others in their efforts to drive away disease. Any jolly old tar who can recall the early practices of the present century can explain how disinfection at sea consisted in cutting up some old and well tarred rope, and causing it to smoulder in various parts of the ship. The tarry fumes were reputed healthy, and certainly mollified the foul odours of ill-ventilated holds, where contagious maladies too often appeared with all the virulence they are well known to acquire in crowded localities. Chloride of lime, chloride of zinc, and tar distillates succeeded the burnt rope as ships’ disinfectants. Chloride of lime is still the favourite, especially with the lazy sailor. A

small quantity of this preparation in a pailful of water whitens the decks without much labour, and whereas effectual disinfection *below* is impossible by its means, I need scarcely say, that "effectual disinfections" anywhere has not yet become an article of a seaman's faith. There are many fine steamers afloat as pure and wholesome as the best homes, but, generally speaking, much might be gained by greater cleanliness, and the more thorough use of disinfectants at sea.

And this leads me to say something about chloralum. It is, chemically speaking, a hydrochlorate of alumina. The alumina being hardly basic, the solution is an admirable means for conveying and distributing a large quantity of practically free acid. That acid is the most powerful of all antiseptics or disinfectants, and is well known as muriatic or hydrochloric acid. Aluminous salts have long been known as antiseptics—alum—the sulphate of potash and alumina—simple sulphate of alumina, the acetate of alumina are all, more or less, antiseptic. It was a knowledge of this, and a request on the part of an Australian merchant for a harmless substitute for chloride of zinc to check the putrefactions of animal offal, that led me to experiment largely with the chloride of aluminium. I fed dogs on meat preserved with it. I preserved hides and various parts of animals by injection or immersion. Fish were treated with weak solutions, and if properly cleaned and after being steeped, if dried, retained their sweetness and proved good food. It was not long before I perceived that I had in this salt one of the most powerful therapeutic agents ever introduced in the *Materia Medica*. Its remedial powers had never been thought of, and I failed to trace a single record on the subject. The readiness with which stinking fish and meat were deodorized by means of chloralum led us to ascertain that it was in virtue of the avidity with which the hydrochloric acid of the compound seized ammonia in its many forms that it arrested the most common and most obnoxious smells. This induced me to have it used in cases of gangrene and of fetid cancer. I soon found it an admirable agent for wounds, ulcers, abscesses, and various purulent discharges. It is one of the most precious agents to stop bleeding, and for this purpose is, I believe, even more active than the sesquichloride of iron. In dealing with contagion I soon found that when mixed with an animal poison it so completely modified it as to render transmission to the most susceptible animal impossible.

Such were the features of an agent, which I called by a short name so soon as I found that it was susceptible of universal use in the household.

DEATH AND SLEEP,

A REVERIE, BY PERCY HAMILTON.



At eve I climbed a belfry tower,
 Which rose above an ancient town,
 And heard the clappers chime the hour,
 As giddy I looked down.

I watched the busy throng below,
 Dwarfed by the height—a pigmy race—
 For ever moving to and fro,
 About the market place.

And musing on man's littleness,
 When measured by the Infinite,
 They seemed to grow still less and less,
 Till they were lost to sight.

Deep wrapt in thought I lingered on,
 Not marking how the time went by,
 And waking, found the crowd had gone
 And stars were in the sky.

I felt a strange mysterious awe
 Thrill through me—not unmixed with fear—
 And lifting up my eyes I saw
 Two Angels standing near.

They stood upon the parapet,
 And all around the air was bright.
 The wings of one were black as jet,
 The others snowy white.

The angel with the wings of black,
 Seemed sorrowful and full of woe,
 As from a quiver at her back
 She filled an ebon bow.

And ever and anon she shot
 An aimless arrow to the night;
 And wailing rose from every spot
 On which they chanced to light.

The other scattered poppy flowers,
 And sleep compelling Hellebore,
 And mortals hailed the welcome showers,
 And stretched their hands for more.

And as they pressed them to their eyes,
 The poor forgot their sore distress,
 The sorrowful their miseries,
 The worn their weariness.

And though I wondered who they were,
 These sister Angels, what their task ;
 My tongue was tied, for very fear
 I did not dare to ask.

But as with bated breath I stood,
 A sad sweet voice fell on my ear.
 "Ah! Sister Sleep, it is not good
 For me to linger here."

The black-winged Angel whispered low,
 "I envy thee thy happy hours,
 And fain would lay aside my bow
 And take instead thy flowers.

"I know that mortals hate me sore,
 And say that I their treasures snatch :
 They tremble if I pass the door,
 Shriek if I lift the latch.

"Whilst thou art hailed by low and great,
 By young, by old—a welcome boon—
 They think thou ever com'st too late,
 And leavest all too soon.

"I must away! near thee I brood
 Upon the wretched lot I fill ;
 And wish like thou to work them good
 Instead of working ill."

"Dost thou," the white-winged said, "repine ?
 Thy lot was fixed for thee in love—
 A nobler task below than mine—
 A higher place above !

"Ah! Sister Death, it is not true :
 Thou workest them more good than I ;
 They would not dread thee, if they knew
 How good it is to die !"

"They are too blind to see thy worth,
 That richer gifts by thee are given,
 I only give them rest on earth,
 Thou givest rest in heaven !"

THE UNITED STATES NAVY.

THE following extracts are from the report recently made by Admiral Porter on the Navy of the United States. It will be seen that the gallant Admiral urges on his Government many points of consideration, not the least of which is the perfection of the Torpedo Service. His recommendations and observations on the various questions relating to the American Navy are marked by much good sense, and cannot fail to interest those who concern themselves in maritime affairs.

WASHINGTON, D. C., Nov., 1871.

SIR,—I have the honour to lay before you a report upon the general condition of the Navy, as far as it has come under my observation, together with such recommendations as seem to me advisable. * * *

Supply of Seamen.—It is somewhat difficult to obtain good seamen in the Navy, and the only way to secure so desirable an end is to insure to those who enter the service good clothing, good food, and kind treatment. I receive many complaints from commanding officers in regard to the *quality* of seamen who are sent to ships. It is stated that men rated as "seamen" are in many cases only fit to perform the duties of ordinary seamen, and "ordinary seamen" those of landsmen. There must be a defect in the system of enlistment, or officers at rendezvous are not sufficiently particular in rating men. An order on this very subject was issued about eighteen months since, yet commanding officers still complain that the men are inferior to their ratings. I would recommend that the present system of enlisting men on board receiving ships be made a subject of inquiry, with a view to remedy any defects that may exist. Certain it is that there are hundreds of men who ship in the Navy for no other purpose than drawing the advance money, after which they desert, and throw themselves into the hands of the shipping-masters, who, ignored by the Naval authorities, secrete the deserters until an opportunity occurs to send them to sea in merchant vessels. How officers manage to preserve discipline on board their ships, with such mixed crews as they find under their command, especially when we consider how much their authority has of late been diminished, it is difficult to tell. It is only by the exercise of great patience and forbearance, joined to extensive experience in the management of large bodies of men. As we have but a small Navy, and, comparatively speaking, a small number of men, we ought to secure the best material in the world. Recommendations have been made, from time to time, by officers of the Navy, and urged by me, whenever I have had an opportunity, to organize a good apprentice system, for the purpose of enlisting boys, not with the idea that they are all to be made officers, but to introduce into the service good petty officers and seamen.

Preservation of Life.—With regard to the appliances for preserving life at sea, I am satisfied that in both the Navy and Mercantile Marine, the means are inadequate, but particularly so in the former. It will be remembered how very lately the sloop-of-war *Oneida* went down in smooth water, on the coast of Japan, so suddenly that what few boats were attached to the ship saved only a

small portion of her officers and crew, who stood heroically to their posts to the last. Had this vessel been supplied with cork mattresses, which lashed up in a hammock, and thrown overboard, would support two or more men, all her crew might have been saved. An ordinary mattress, tightly lashed in a good hammock, will support a man for an hour until it becomes saturated with water; how much better, then, would a cork mattress help to save a shipwrecked man? I would here remark, for the benefit of officers, that no hammock that is not well lashed up, should be allowed to go into the netting, for in case of a sudden alarm of fire, when it may be necessary to leave the ship in a hurry, the hammocks might save the lives of every man on board. Cork mattresses would certainly go far towards accomplishing this end, and I recommend that they be introduced into the Navy. They are not a new invention, nor is my proposition an original idea, these mattresses having already been adopted by some foreign Navies. Naval officers will see, in this invention, not only a means of saving life, in emergency, but also of preserving the health of the ship in warm climates. Cork shavings or sawdust must be cleaner than either common hair, cotton, or moss, and much healthier to sleep on.

Exercises.—I would recommend more sailing in squadrons. Nothing improves a fleet or squadron so much as the ships acting together. It gives a fine opportunity to exercise fleet sailing in boats, which single vessels cannot do. I recommend that all vessels fitted out hereafter have the following allowance of steam cutters:

First Rates.—Two steam cutters of first class, and one of second class.

Second Rates.—One steam cutter of first class, and one of second class.

Third Rates.—Two steam cutters of second class.

Fourth Rates.—One steam cutter of second class.

Fifth Rates.—One steam cutter of second class.

This will add greatly to the health and efficiency of the ships' crews, and be a great saving of labour. In concluding this subject, I would add that many officers have expressed the opinion that our ships abroad were never in a more efficient condition, as regards discipline, drill, and *morale*.

Propellers.—There are certain disadvantages inseparable from an increase in the number of blades. The friction of the extra blades in the water absorbs a large amount of the power of the engine, without any increase to the propulsive power. The assertion that with a number of blades there is less vibration, is partly true; but vibration arises principally from the inequality of resistance during the successive positions of the propeller around its centre, and its too close proximity to the sternpost—a fault of construction, not of propellers. A four-bladed propeller has one-third more weight than a propeller with two blades, and makes a ship drop heavily in an uneasy seaway. It is, in fact, a heavy drag on all occasions. By a reference to the logs of our Naval vessels, it will appear that they have in but very few instances developed high speed, eight knots being the general average, while only a few vessels have attained a speed of twelve. In the French and British Navies, on the other hand, fourteen and fifteen knots is almost invariably obtained in iron and wooden vessels built within the past four years. I therefore attribute the slowness of our ships in a measure to the defects in the propellers, which, as far as I know, are the exact reverse of Griffith's propeller, the accepted one in England, and the one used in the *Lord Clyde* and *Lord Warden*. Many other forms of screw propellers have been used, but this one seems to me to have more advantages than any, ex-

cepting, perhaps, the Hirsch screw, lately invented, between which and the Griffith's screw there appears to be considerable rivalry.

Torpedoes.—I now approach a subject that has within a few years attracted the earnest attention of all maritime nations. The torpedo is the most terrible engine of war ever yet invented, and, as its power gradually becomes developed, it will, no doubt, in the end, prove a good peace-maker, since it is a well-established fact that the more powerful the instruments of war become, the less numerous and less destructive are the wars to human life. We should therefore avail ourselves, as far as possible, of the new weapon, and endeavour to keep ahead of foreign powers in this mode of warfare, if we do not in others. At present our coasts are very accessible to hostile fleets, and the chief of our army ordnance corps even complains of the defenceless condition of the forts that guard our shores. Upon what, then, but the torpedo, have we in future to depend? Hereafter torpedo vessels will be considered as the light dragoons of a fleet, lying ready, when the ships are engaged and covered with smoke, to rush in under its cover and deal destruction right and left, or to tow some disabled vessel of the enemy out of action, as a prize, or to blow her up if she declines to surrender. Ramming will, no doubt, be extensively resorted to, but it will be found, in the first Naval fight that takes place, the torpedo will decide the result. A fleet once brought to battle could no more elude these swift torpedo boats than the unwieldy bison the Indian of the plains; but when contending with iron-clads, which have a speed of from 14 to 15 knots per hour, a slow torpedo vessel would be simply worse than useless—she would invite defeat or failure. Any vessel of greater speed could blow up the torpedo boat with a Harvey torpedo, or one on that principle, which, on a swift vessel, is, I am, satisfied one of the most effective instruments of destruction ever invented. Any ship can carry it, and even merchant steamers could use it as an almost certain means of defence against an enemy's cruisers. I would recommend, that besides several smaller torpedo boats, built for coast defence, that six of a little more than 1,000 tons each be constructed of iron, for foreign service. These should be able to keep the sea in all weather, under steam or sail, and be provided with comfortable, well-ventilated quarters for officers and men. The number I have stated would be few enough to build.

Ironclads.—By referring to the list of ironclads of foreign nations, and comparing it with that of last year, you will perceive a large increase of that class of vessel. The fleet of Great Britain, in particular, is most formidable. Never in the history of England was she better prepared than at the present moment for war, in ships, material, officers and men, as I know to be the case from the actual inspection of her men-of-war by our most intelligent officers. The introduction into our navy of the monitor system was the death-knell of the great wooden fleet of Europe. England, in particular, suffered by the change, but, nothing dismayed, the Board of Admiralty went to work and devised plan after plan, until the British fleet now boasts the finest equipped iron ships in existence, capable of contending with the combined navies of Europe. To suppose that this Board of Admiralty, so unjustly criticized, have not made mistakes, would be out of the question, but their errors were comparatively few, and have, in most instances, been rectified. I do not believe that we should try to compete with Great Britain in the number of our war vessels, but we should, at least, have a fair proportion of ships, compared with the number in our merchant marine. Now that our men-of-war are being rigged as full sailing ships, I beg leave to call your attention to the unprotected condition of our

citizens among the Islands in the Pacific, and at least four of our vessels should visit during the year the groups of islands, in that quarter, inhabited by people scarcely civilized enough, as yet, to recognise the rights of foreigners, and to whom guns make a stronger appeal than any reasoning of merchants or missionaries. It is a homely saying, that, "there is no time to exchange horses when crossing a dangerous stream," and it is too late to commence preparations for war when the enemy is entering our harbours. When our officers abroad fall in with the lately-built foreign ships, with their improvements in defensive armour and rifled guns, they are satisfied with the hopelessness of any attempt to encounter, with ships like ours, the triumphs of European naval architecture. We cannot at present make rifle guns in this country. No person will take a contract for them, unless he is paid for the new machinery he will have to put up, and the only course left us is to purchase abroad what we require, until we can get a Government foundry, with machinery capable of supplying all the guns we want.

Young Officers.—In side-wheel steamers young officers lose the advantage of exercises and manœuvres with yards and sails. I would therefore recommend that they should only serve one year at a time in vessels of that class. The officers serving in the *Frolic*, *Ashuelot*, and *Monocacy* class will soon come before a board for examination and will scarcely have a fair chance with those who have been constantly employed in square-rigged vessels, or be expected to have gained as much practical knowledge of seamanship.

Expenditure of Coal.—The vessels of the navy are using entirely too much coal, and the General Order, No. 131, is not carried out in the spirit intended. The unnecessary expenditure of fuel costs considerable in more than one respect. It causes the wearing out of boilers and machinery, and inflicts serious injury on the discipline of the service, preventing officers and men from becoming expert in matters of seamanship. In some navies, the cost of an unnecessary outlay of coal is checked against the pay of the commanding officer of the vessel. I do not recommend such a course towards our officers, who, I am sure, can be controlled by milder measures; but I mention this merely to show the importance attached by other naval powers to the unnecessary expenditure of coal, which, if persisted in, would finally eat out the vitals of every navy.

To the Secretary of the Navy.

ON THE CORRECTION OF THE SUN'S DECLINATION.

London, January 19th, 1872.

To the Editor of the Nautical Magazine.

MR. EDITOR,—In the *Nautical Magazine* for the present month, there appears an elaborate mathematical paper on the correction of the sun's declination from the pen of J. Gordon, Esq., A.M., which

occupies nine pages of the journal. I well remember that in an old volume of the *Nautical* (I think it was for the year 1844, but have not the work by me at the present time), there was a most amusing article, entitled "Scientific Impertinences," occasioned by the official description of a light then recently established for the guidance of navigators, which was to be distinguished by the ratio of its periods of light and darkness. The writer of the article referred to, I think stated, that a man who could work a problem in ratios the moment he turns out of his cot, in the middle watch, does not go poking about the sea in ships, but looks for something better.

I think the same remark will apply to Mr. Gordon's method of correcting the sun's declination by algebraic formula. I remember, sir, in the olden time, that correcting the sun's declination at "seven bells," always appeared to my boyish ideas to be synonymous with "steward bring the brandy;" and should this algebraic method ever come into use (of which there is no great fear by the bye), "seven bells" would not afford sufficient time before noon for the calculation, and six bells, or eleven a.m., would probably be the time at which the calculation would commence. This would also afford time for "another nip," but whether this would assist in the solution of the problem is a matter for further consideration.

But we know that sailors generally are averse to change—and except changes can force their way into general adoption by their own unqualified advantages—there is little fear of their becoming general among the nautical community,—and it is fortunate for us all that this is so.

The term port—from it is evident superiority over its predecessor larboard—soon became general—whilst the term "establishment of the port" makes but little progress over its ancient rival—the "Time of high water," or "*T.H.W.*," and the scientific term "declination of the compass," against "variation of the compass," meets with still less encouragement.

But let us see whether Mr. Gordon's formula possesses any advantages over the old method in general use. And if it does, why, sir, I know of no better channel for its advocacy than the pages of the *Nautical*.

Required (by the old method in general practice) the sun's declination for November 30th, 1871, at 1h. 25m. 30s. a.m. app^t. time at Greenwich.

		Sun's dec. Nov. 30, app'. noon, incr. hourly diff.		
		H. M. S.	H. M. S.	
November	30th	1 25 30	21 38 15.1	S 24.53
			4 20.0	10.6
or ,,	29th	13 25 30		14718
Before noon	30th	10 34 30	21 33 55.1	24530
			(declination required)	26,018
				4.20.018

This is the method generally adopted, but even here it is carried out to greater precision than is required for general practice, for if we multiply the difference for 1 hour by $1\frac{1}{2}$ hs., the time before noon, it will give an error of only 2.44 seconds in the result.

But for greater precision let us use the exact method, correcting for second differences, by the rule given in the *Nautical Almanac*.

		Sun's dec. Nov. 30, app'. noon, incr. hourly diff.		
		H. M. S.	H. M. S.	
before noon	30th	10 34 30	21 38 15.1	S 24.53 + 1.02
			4 21.8	23 53
		5 17		306
			21 33 53.3	24.76 10 510
			(declination required)	247.60 5.406 = .23
				30 12.38
				4 1.65 24
				30 206
				261.836
			4 21.8	

This last is the same as Mr. Gordon's formula, page 31, sec. V.

$$\text{or } D = D_2 + t^1 \left(d_1 - \frac{1}{2} t \delta_2 \right)$$

Mr. G.'s love of mathematical science is well known, but it appears to me that this elaborate mathematical investigation of the method of correcting the sun's declination is something like making use of a sledge hammer to kill a flea.

I remain, Sir, faithfully yours,

NEARCHUS.

We have much pleasure in inserting this letter as it will we trust effectually remove any impression that might have existed on the part of our readers that in inserting Mr. Gordon's paper we intended to express any approval of it or any opinion on its merits.

—ED. N.M.

[We have received another letter with reference to Mr. Gordon's paper, which we also publish.]

To the Editor of the Nautical Magazine.

SIR,—The "variation for one hour" to which in your last number Mr. Gordon apparently objected, has obviously been adopted in the *Nautical Almanac* to save the user the trouble of considering the second difference in his interpolation. In 1861, however, Mr. Gordon's views were somewhat different, as the following extract from the *Nautical Magazine* for December, 1861, will show. "Notwithstanding the remarks made above, it must be admitted that the new plan for hourly difference is a very ingenious method for finding the declination as correct as by using second differences."

Mr. Gordon's "Remark" in his last paper on the desirability of substituting the word "change" for "difference" in the *Nautical Almanac* is transparently absurd, as it supposes that those persons who use the *Nautical Almanac* have no conception of the meaning of the word "difference" in its algebraical sense.

I am, sir, yours, etc.,

D. P.

ORIGINAL PROBLEMS OF NAUTICAL INTEREST.

1. A steamer built guaranteed to run the measured mile in still water in five minutes, on trial runs the mile in one direction in $3\frac{1}{2}$ minutes with a current. Query, In what time must she do the run in the opposite direction against the same current to come up to the stipulated speed?

2. Two steamers, A and B, approaching each other on straight courses, see each other's masthead lights brightening, one on port the other on starboard side. The vessels are three miles apart. The speed of A is two knots an hour greater than the speed of B. When standing directly below his masthead light A sees B's light stationary on his own rail. In what direction will A's light appear to be moving when seen by B, and if both keep their courses will they pass each other and at what distance apart, and which will cross the other's bows?

Answers should be sent to the Editor, at No. 60, late No. 1, Vincent Square, Westminster, S.W., with initials or name of the sender.

M

SOCIETIES—MEETINGS, ETC.

ROYAL GEOGRAPHICAL SOCIETY.—At the ordinary evening meeting of the Society, on Monday, 8th January, Sir Bartle Frere, Vice-President, explained to the members and others present the grounds on which the Council had determined to dispatch an expedition from England for the search and relief of Dr. Livingstone. He said it was now more than two years and a half since anything in the shape of written communication had been received from Livingstone. In one of his last letters he had described himself as in great want of men, stores, clothing, and medicine; in short, of everything that was necessary to enable him to continue his explorations. It was necessary to remind the meeting that, on the receipt of those letters, Her Majesty's Government and the Geographical Society took immediate action to supply the wants of our great traveller; a grant of money being made by the Treasury, and the amount intrusted to our Consul at Zanzibar to be expended in the hire of men and purchase of stores, and their transmission into the interior. Various causes had intervened to prevent some portion of this assistance reaching Livingstone; and, lately, disturbances had broken out in the district about midway between Lake Tanganyika and the coast, which, without affecting him personally, had increased the difficulty of communication. That Livingstone was alive, and had been pursuing the great plan of exploration which he had marked out before leaving England, was to be concluded from the rumours that had reached Zanzibar from the interior; and that plan was the tracing of the sources of the Nile and the limits of the great lake region of the African interior. His latest letters gave a vivid picture of his destitution as regards the commonest necessaries of a traveller. It would be in the last degree disgraceful to them, not only as a body of geographers, but as Englishmen, if they allowed him to perish without making an effort to relieve him. The fortunate chance of a private steamer preparing to leave London in the course of the month direct, *viâ* the Suez Canal, for Zanzibar, had compelled the Society to act rapidly in this matter. The expedition was being organized, and an appeal has been made to the public for funds to defray the expenses. Already subscriptions had been received to the extent of about twelve hundred pounds.—In the discussion which followed, Mr. Walter Brodie expressed himself strongly of opinion that it was the duty of Government to supply the means of relieving Livingstone, and that they might furnish a

small steamer for the conveyance of the persons composing it to Zanzibar. Dr. Purcell also thought the influence of the Council ought to be brought to bear on the Government to take up the question. Mr. Horace Waller (who was formerly on the River Shiré with Livingstone) approved warmly of the proposed expedition. We had Livingstone's own statements of nearly three years ago to show that he was destitute of such indispensable articles as boots and quinine. There was reason to believe that, although a man of iron frame and great endurance, his constitution has been impaired by fevers and fatigue, and that he stood now in great need of help. As to Livingstone's own satisfaction with such an expedition, the names of such friends as the late Sir Roderick Murchison and Sir Bartle Frere, who had been and now were striving to furnish him relief, would ensure his welcome to anyone bringing a passport from them.

At a subsequent meeting of the Society on the 22nd, Sir Henry Rawlinson in the chair, a letter was read from the Treasury declining to make a grant in aid of the expedition. Mr. Markham, the secretary stated that this decision would not be allowed to retard the preparations for the expedition for a single day. Nearly 200 persons had volunteered to take part in it, and the choice of a leader had fallen upon Lieutenant Lewellyn Dawson, R.N., a scientific seaman, who possessed most of the qualifications which were needed to fill so difficult and trying a post, and on whose ability and judgment the Council had perfect confidence. The expedition would leave England early in February in the *Abydos*, steamer, chartered by Messrs. J. Wiseman and Co., who had generously undertaken to convey all stores free of charge, and if possible, to secure free passages for the members of the expedition. Sir Henry Rawlinson stated that the subscriptions received amounted to £1,700; and public meetings in the great towns throughout the country were to be held in aid of the fund. He had received an invitation from the Lord Mayor inviting him to wait on him with a view to arrange for a great public meeting in the City for the same purpose. Lieutenant Dawson was afterwards introduced to the meeting by the President, and was warmly received.

At the meeting on the 8th, the following paper was read, "Description of Bunder-Murayah, Somali-land," by Captain S. B. Miles, Political Resident at Aden. This traveller, who recently gave an interesting account of a journey into the interior of Yemen, in company with M. Murzinger, has this year visited the portion of the African coast in the vicinity of the Bunder Murayah, and has made an excursion into the interior as far

as the valley called the Wady Jarel. The Bunder Murayah is in lat. $11^{\circ} 43' N.$, and is the chief port of the Mijjertheyn tribe of Somalis. It is situated at the foot of a range of hills bearing the same name, which rises about a mile behind the town to a height of 4000 feet. The town extends along the beach for nearly half a mile, and contains upwards of 200 houses. The permanent population is only some 600 or 700; but during the trading season, when the Kafilas arrive from the interior with gums and other produce, and the Arab merchants come across from the opposite coast, this estimate is quite doubled. The Somali coast, from Murayah to Alloola, has three towns not laid out on the charts—namely, Gurso, Kesulli, and Habo. From Cape Guardafui to Ras Hafoon the coast is bleak and sterile, with two or three fertile valleys, and is very thinly peopled; but on the top of the square table land of Hafoon there are extensive pastures, on which camels, cattle, horses, and sheep are grazed in the season. The ancient geography of this coast, as given in the Periplus of the Erythrean Sea, has become more clear and intelligible since our knowledge of it has increased, and we have had the accurate surveys of the Indian navy to refer to for its elucidation. The chief emporium of the coast there, said to have been Mosyllon, is recognised by Captain Miles in Berbera, and Hafoon is identified by him with the ancient Ophone. The Burel Somali country, which has been described in this report, is very interesting, and the author considers there are few which offer greater attractions for research and facilities for exploration. The trade in precious gums from the Somali coast is the most ancient on record. The produce of the *Boswellia* trees is not only frequently mentioned by the Latin poets, proving the universal commerce of the nations of antiquity for centuries in frankincense, but it is also given as one of the ingredients for the holy perfume in Exodus xxx. 34—36. For this among other reasons the Somali coast is a country of peculiar interest, and one which, both for its own sake and for that of the unknown lands which lie beyond it, is deserving of the attention of those who may hereafter engage in geographical exploration.

The other papers announced for reading were postponed to a subsequent meeting.

WITH reference to Mr. Leighton Jordan's pamphlet on Oceanic Circulation, we purpose shortly devoting an article to the subject, therefore a review of his book now would be premature. We shall not fail to discuss his work in our paper,

MONTHLY ABSTRACT OF NAUTICAL NOTICES.

No.	PLACE.	SUBJECT.
30	RED SEA—Gulf of Suez—Ras Gharib.	Establishment of a Light.
31	ADRIATIC—Cherso Island—Port Cherso.	Alteration in Light.
32	„ Veglia Island—Port Malinesca.	Establishment of a Harbour Light.
33	„ Kalamota Channel—Port Gravosa.	Beacon on Shoal.
34	SICILY—South Coast—Port Empedocle (Girgenti)	Light on Mole.
35	FRANCE—West Coast—Ile du Pilier and Point des Dames.	Alteration in Light.
36	„ „ Ile de Rê—Chauveau.	Alteration in Light.
37	ENGLAND—South Coast—Dungeness Point.	Beacon mast on the Point
38	„ „ South Foreland.	Changed to Electric Light.
39	SOUTH AUSTRALIA—Spencer Gulf—Wallaroo Bay.	Shoal Patch discovered.
40	JAVA—Madura Strait—Zwentyes or Koko Reef.	Exhibition of the Light.
41	JAPAN—Kiusiu—Satano—Misaki (Cape Chichakoff).	New Light.
42	MEDITERRANEAN—Sicily—Cape Passaro Island.	Error in description of Light.
43	„ France—Gulf of Foz—Port Bouc.	Alteration in Light.
44	„ Spain—Marbella.	Establishment of Lights.
45	UNITED STATES—Maryland—Chesapeake Bay—Choptank River.	Light Exhibited from a Lighthouse.
46	„ Lake Huron—Thunder Bay Lighthouse.	Establishment of a Fog Signal.
47	ENGLAND—East Coast—Newarp Light-vessel.	Alteration in position.
48	UNITED STATES—California—Point Arena Lighthouse.	Establishment of a Fog Signal.
49	NORTH SEA—Holland—Goeree Island—Steenen Bank.	Alteration in Light.
50	ADRIATIC—San Antonio Canal—Point Indria.	Establishment of a Light.
51	RED SEA—Gulf of Suez—Ras Gharib.	Alteration in Light.
52	SOUTH AUSTRALIA—Cape Jaffa.	Establishment of a Light.
53	ADRIATIC—Cherso Island—Prestenizze Point.	Establishment of a Light.

NOTICES.

30.—RED SEA.—*Gulf of Suez.—Ras Gharib.*—A fixed white light having a red sector between the bearings S.S.W. $\frac{2}{3}$ W. and S.W. by W. has been established. It is elevated 165 feet above the sea, the white light should

be seen 20 miles and the red light 12 miles. The lighthouse is painted red. Position as given (doubtful) lat. $28^{\circ} 21' N.$, long. $33^{\circ} 7' E.$

31.—ADRIATIC.—*Cherso Island*.—*Port Cherso*.—A new fixed white light, 24 feet above the sea, is exhibited from an iron pillar at the extremity of a small mole at Point Covacine at the entrance of the port; it should be seen 8 miles.

32.—ADRIATIC.—*Veglia Island*.—*Port Malinsca*.—A fixed white light is exhibited from a lamp post at the extremity of the mole of Port Malinsca, N.W. side of Veglia Island; it is elevated 19 feet, and should be seen about 2 miles.

33.—ADRIATIC.—*Kalamota Channel*.—*Port Gravosa*.—A stone beacon of a pyramidal form, surmounted by a wind-vane, and showing about 8 feet above high water, has been erected on the largest rock of the shoal extending from the south, or Lapad, side, within the entrance of Port Gravosa.

34.—SICILY.—*South Coast*.—*Port Empedocle (Girgenti)*.—A green light which should be seen 2 miles, is exhibited from a mast at the extremity of the mole in the course of construction.

35.—FRANCE.—*West Coast*.—*Bourgneuf Bay*.—*Pilier and Point des Dames Lights*.—Red sectors of light of about 30 degrees of arc, will from the 1st March next, be shown from these lighthouses as a guide for clearing the Chaussée des Bœufs they should be seen respectively 14 and 13 miles.

NOTE.—When the white light of one of the lighthouses is visible, the vessel will be clear of the Plateau des Bœufs, but when the two red lights are seen the course should be altered.

A second red sector will be shown from Ile du Pilier lighthouse covering the La Couronnes Reef, south side of the entrance of the Loire River.

NOTE.—When passing through Grand Chenal, keep the white light in sight in order to avoid this danger.

36.—FRANCE.—*West Coast*.—*Ile de Rè*.—*Chauveau Light*.—From the 1st March next, a red sector of light will be exhibited from Chauveau lighthouse, east end of Ile de Rè, to cover all the rocks along the south coast of the island as far as to the westward of Point de Chanchardon. These dangers will be avoided by keeping the white light in sight.

37.—ENGLAND.—*South Coast*.—*Dungeness Point*.—In accordance with a previous notice, a beacon mast 50 feet high having two large globes fixed vertically on it, has been placed on the point a few yards above high water mark.

38.—ENGLAND.—*South Coast*.—*South Foreland Lights* have been changed to electric lights of great power and brilliancy.

39.—SOUTH AUSTRALIA.—*Spencer Gulf*.—*Wallarco Bay*.—A shoal patch of 16 feet at low water springs has been discovered in this bay, it is

nearly a mile to the southward of the Riley Shoal Buoy, and from; it the north-west extreme of Riley Point bears N.N.E. $\frac{3}{4}$ E., the Smelting chimney at Wallaroo S.E. by E. $\frac{1}{4}$ E., and the magazine on Hughes Point S.S.E. $\frac{3}{4}$ E.

NOTE.—It has been recommended, that for vessels beating in to the anchorage with S.E. wind, the jetty at Wallaroo should not be brought to bear to the southward of E.S.E. until Riley Point is brought to the northward of N.N.E.

40.—**JAVA.**—*Madura Strait.*—*Zwantyes or Koko Reef.*—In accordance with previous notice (No. 5) the light is now exhibited, and is a *revolving white* light, showing a fixed light for *one and a half minutes*, followed by an *eclipse of ten seconds*, a *flash of ten seconds* and a second *eclipse of ten seconds*, the revolution being completed in *two minutes*; it is elevated 54 feet above the water, and the fixed light should be seen 12 and the flash 14 miles. Position lat. $7^{\circ} 28' S.$, long. $113^{\circ} 7' E.$

In foggy weather, or if any interruption of the regular working of the light should occur, a bell will be sounded.

41.—**JAPAN.**—*Kiusiu.*—*Satano.*—*Misaki (Cape Chichakoff).*—A new light of the first order has superseded the temporary light hitherto exhibited. The light is a *fixed white* light, obscured landward from N.N.W. $\frac{1}{4}$ W. to N.E. by E. $\frac{1}{4}$ E., elevated 200 feet above the sea, and should be seen 21 miles.

The lighthouse, 35 feet high, is octagonal shaped, and painted white; it is situated on a small island lying about 300 yards from the mainland. Position, lat. $30^{\circ} 58' 30'' N.$, long. $130^{\circ} 40' E.$

42.—**MEDITERRANEAN.**—*Sicily.*—*Cape Passaro Island.*—The Italian Government has given notice of an error in description of the light on this island, viz., Instead of being “a fixed and flashing white light showing a flash every three minutes,” it should be—a *fixed white* light showing a *red flash every three minutes*.

43.—**MEDITERRANEAN.**—*France.*—*Gulf of Foz.*—*Port Bouc Fort Light.*—A sector of *red* light of 40 degrees of arc is shown towards the approach of the Rhone River, or from the entrance of St. Louis Canal on one side, to a depth of 32 feet water on the other.

The red light should in clear weather be seen from a distance of 8 miles, and the white light 12 miles.

44.—**MEDITERRANEAN.**—*Spain.*—*Marbella.*—Two harbour lights are exhibited from the extremity of the iron mole at Marbella.

The lights are *fixed red* lights, placed horizontally and elevated 23 feet above the level of the sea.

The mole is now 370 yards long.

45.—**UNITED STATES.**—*Chesapeake Bay.*—*Choptank River.*—The light at the entrance is now exhibited from a screw pile lighthouse. The light,

as hitherto, is a *fixed white* light of the sixth order, elevated 38 feet above high water, and should be seen 10 miles.

The lighthouse, painted white, stands in 9 feet water at low water about $1\frac{1}{2}$ miles to the south-eastward of Bononi Point in lat. $38^{\circ} 39' 10''$ N., long. $76^{\circ} 10' 40''$ W.

In thick or foggy weather a fog bell will be struck by machinery *every ten seconds*. The light-vessel has been removed.

46.—UNITED STATES.—*Lake Huron*.—*Thunder Bay Lighthouse*.—A steam fog whistle has been established. In thick or foggy weather it will be sounded as follows, viz. :

A blast of *eight seconds* duration, followed by an interval of *ten seconds*, then a blast of *two seconds* and an interval of *forty seconds*, alternating in this manner every minute.

Should the fog whistle be out of repair, the fog bell hitherto used will be sounded.

47.—ENGLAND.—*East Coast*.—*Newarp Light-vessel*.—In order to show the direction in which the vessel is riding, the lantern on the foremast has been raised *one foot*, and that on the mizen mast *four feet*. The respective heights of the lights are now, foremast 25 feet, mainmast 34 feet, and the mizen mast 20 feet.

48.—UNITED STATES.—*California*.—*Point Arena Lighthouse*.—A steam fog whistle has been established. In thick or foggy weather a blast of *five seconds* will be sounded with intervals of *twenty-five seconds*.

49.—NORTH SEA.—*Holland*.—*Goeree Island*.—*Steenen Bank Light*.—This light now shows *red* between the bearings S.S.E. (easterly) and S. $\frac{1}{2}$ W., or between the No. 1 black buoy of the Slykgat and the No. 1 white buoy in the Bokkegat.

50.—ADRIATIC.—*Dalmatia*.—*San Antonio Canal*.—*Point Indria*.—A *fixed red* light is exhibited 26 feet above the sea from a lamp post on this point.

51.—RED SEA.—*Gulf of Suez*.—*Ras Gharib*.—With reference to notice No. 30 respecting this light; the red sector of light therein described is to be removed, and the light will consequently be a *fixed white* light.

52.—SOUTH AUSTRALIA.—*Cape Jaffa*.—A first class *revolving white* light attaining its greatest brilliancy *every thirty seconds* is now exhibited from a screw pile lighthouse recently erected on the reef off the Cape. The light is 100 feet above the sea level, and in clear weather should be seen 16 miles.

53.—ADRIATIC.—*Cherso Island*.—*Point Prestenizze*.—A fifth order *white* light with a *red flash every three minutes* has been established. It is elevated 56 feet above the sea, and should be seen 11 miles.

HYDROGRAPHIC.

KARACHI OR KURRACHEE.

THE following directions for approaching Karáchi or Kurrachee harbour, with the depth vessels should load to at the different seasons of the year to ensure crossing the bar without detention, has been issued by the Master Attendant of that port, dated 1st September, 1871.

APPROACHING THE PORT—INDUS BANKS.

The Coast of Sindh below the parallel of 24° north latitude, should be approached with great caution—20 fathoms water being found (in places) within two miles, and 10 fathoms water close to the outer edge of the banks, which extend to the south-west from the Kukiwari mouth of the Indus.

To the north of the above parallel, caution is still necessary, and the coast should not be approached under 14 fathoms; this line of soundings will carry a ship from 7 to 9 miles only off the Hajamri and Kediwari banks of the river, 10 fathoms being found in places close to their extreme edge.

The set of the tides and currents off these banks is very uncertain; the land is low throughout, and barely visible in clear weather from the outer edge (of the banks).

Too much attention cannot be paid to the lead on this coast, more especially in passing the banks of the Indus.

Ras Muara (or Cape Monze), distant 18 miles W. $\frac{1}{2}$ N. from the western entrance to Kurrachee, is high and bold of approach. Ships, during the south-west monsoon season, should make this headland, running to the eastward for Manora point, keeping it (Manora point) on any bearing to the north of east.

Manora Point, forming the west side of Kurrachee harbour, is 100 feet in height, and can be approached to within half a mile on any bearing from north to east with 5 fathoms water; on this point stands the lighthouse and signal station. As at certain times of tide pilots cannot get off, attention should be given to all directions signalled from the shore.

Manora point lighthouse is in lat. 24° 47' 21" N., long 66° 58' 15" east of Greenwich; the light is fixed, 119 feet above the level of the sea, and in clear weather should be seen from a distance of 17 miles, but in the hazy weather prevalent during the south-west

monsoon it is often not seen from a distance greater than from 7 to 9 miles.

Masters of Ships should not, under any circumstances, attempt to enter Karáchi harbour without a pilot.

ANCHORAGE IN THE ROADS.

From June to the middle of September ships should not on any account anchor, but stand off and on, keeping the lighthouse bearing from N. by E. to N.E., one to two miles distant, until boarded by a pilot or directed by signal.

From September 15th until the end of March ships may anchor with the lighthouse bearing N. by E. to N.N.E. distant one mile, in 7 fathoms water, and during the months of April and May the lighthouse should bear N.N.E. to N.E., distant one mile and a half, in 8 fathoms.

Tides.—It is high water at full and change at 10h. 30m.; rise and fall on ordinary spring tides, $9\frac{1}{2}$ feet.

Average depth of water on the Bar during the south-west monsoon season—May to September,

Spring tides	-	-	21 feet 6 inches to 23 feet.
Neap do.	-	-	18 feet 6 inches to 20 feet.

Fine season—October to April,

Spring tides	-	-	20 feet 6 inches to 22 feet.
Neap do.	-	-	18 feet to 19 feet 6 inches.

Ships may Load from 30th of September to 15th May (the bar being generally smooth), during

Spring tides to	-	-	-	-	20 feet.
Neap do. to	-	-	-	-	18 feet.

Ships entering Port from the 15th May to the end of September, during the south-west monsoon, may load in

Spring tides to	-	-	-	-	18 feet.
Neap do. to	-	-	-	-	16 feet.

Ships leaving Port in the south-west monsoon may load during,

Spring tides, to	-	-	-	-	17 feet.
Neap do. to	-	-	-	-	15 feet.

The above difference in draught between vessels entering or leaving port during the south-west monsoon, is explained by the fact, that in proceeding out ships directly head the swell, and consequently pitch deeper and are far more liable to bump than vessels of the same draught running before the swell into port.

There are days during the south-west monsoon when the sea on

the bar is so heavy that ships at the above draught cannot with safety cross, and it is advisable that vessels of from 600 to 800 tons burden only, should be sent out during the bad weather season.

GULF OF MEXICO.—GALVESTON.

The following description of shoal soundings off Galveston, and named the Cole shoal, is from an United States Hydrographic Notice.

Captain Cole, commanding the steamship *Wilmington*, reports that, on September 18th, when bound from Key West to Galveston, highly discoloured water was noticed. Sounded in 8 fathoms, the water shoaling to $4\frac{1}{2}$ fathoms, coarse gravel and shells; gradually deepening to 9 and 10 fathoms, muddy bottom.

This shoal is in the track of vessels running from Tortugas to Galveston bar. Its position by observation, as given, is latitude $29^{\circ} 7' N.$, longitude $94^{\circ} 6' W.$; Bolivar light, W. by N. $\frac{1}{2} N.$, distant 38 miles.

QUEENSLAND, WIDE BAY.

The following information relating to alterations in the channels over the bar at Wide bay has been received from Commander G. P. Heath, R.N., Portmaster, 1871.

In consequence of the gradual shifting northwards of the main or north channel over Wide bay bar, the relative positions of the leading beacons on Inskip and Hook points are now altered, so as to give a line of direction for crossing the bar on a S.W. by S. course, with a depth of not less than 3 fathoms at low water springs.

From the main channel over the bar trending so far northwards the south channel has again deepened to 9 feet at low water, and beacons for leading through it have been re-erected on the south end of Great Sandy island, the inner beacon being white with a pointed top, and the outer red with the upper part V-shaped. The top of the inner beacon will be seen through the arms of the outer beacon on a W. $\frac{1}{2} N.$ bearing.

SOUTH AMERICA, WEST COAST.—MEXILLONES BAY.

The following account of a sunken danger off Leading bluff forming the western head of Mexillones bay is from a French Hydrographic Notice.

The Chilian vessel *Abtao* struck on a small rock bearing N.W.

about $1\frac{1}{4}$ mile from Leading bluff. There is 8 feet on the rock, and from it point Angamos bears E.S.E., point Low S.S.W., and the islet facing Leading bluff S.S.E. $\frac{3}{4}$ E., distant three quarters of a mile.

In addition to this danger, two other rocks, with 23 to 33 feet on them, were found between the Abtao rock and the shore, lying a little to the north, and W.N.W. of the isolated rock above water, which lies to the northward of the islet facing Leading bluff.

Vessels bound to the anchorage in Mexillones bay should round Leading bluff at a distance of at least $1\frac{1}{2}$ mile to avoid these dangers; the Abtao rock being neither marked by seaweed, nor by a breaking sea.

JAVA SEA—DANGERS OFF THE SOUTH-EAST COAST OF SUMATRA.

The following dangers off the south-east coast of Sumatra appear on a Dutch chart (Java Zee en aangrenzende vaarwaters, blad 1, 1870), published by the Hydrographic Department, Batavia, and are inserted in the Admiralty charts.

Ocean Mail, marked with 18 feet and 7 and 8 fathoms all round, is situated 11 leagues to the eastward of the Toelang or Tulang river on the coast of Sumatra, in lat. $4^{\circ} 18' S.$, and long. $106^{\circ} 26' E.$

Comara, a shoal danger of doubtful existence with 7 fathoms close to, placed about 9 leagues to the north-west of the North Watcher, and 7 leagues from the coast of Sumatra, in lat. $4^{\circ} 49' 30'' S.$, and long. $106^{\circ} 14' 30'' E.$

Clifton, marked with 18 feet and 24 to 27 feet to seaward, is situated about 9 miles to the eastward of Cape Scopong or Supong on the coast of Sumatra, in lat. $4^{\circ} 56' S.$, and long. $106^{\circ} 3' E.$

CHARTS, ETC., PUBLISHED BY THE HYDROGRAPHIC OFFICE, ADMIRALTY,
IN JANUARY, 1872.

Sold by J. D. POTTER, 31, Poultry, E.C.

No.	Scale.		s.	d.
388.	m = 2·1	Fernando Noronha	1	6
128.	m = 1·45	Japan, Inland Sea—Channels between Bingo Nada and Havima Nada	2	6
2297.	m = 2·8	Bothnia Gulf—Hango Head to South Quarken... ..	2	6
145a.	m = 3·0	Beloochistan—Khôr Rabâjy (Khowr Rapch)	1	6
2259.	m = 1·1	Port Savanilla, New Grenada	0	6

OUR OFFICIAL LOG.

— —

SEAMEN'S ADVANCE NOTES.—The Board of Inland Revenue have given notice that seamen's advance notes are liable to stamp duty. The duties must be denoted by impressed stamps. The proper impressed stamps are those appropriated to Bills of Exchange, and Promissory Notes. Every person who issues, indorses, transfers, negotiates, presents for payment, or pays any such Advance Note, not being duly stamped, will incur the penalty of Ten Pounds, and the person who takes or receives from any other person any such Note, not being duly stamped, either in payment or as a security, or by purchase or otherwise, will not be entitled to recover thereon, or to make the same available for any purpose whatever.

[We have never heard that these notes are not liable to stamp duty. In fact the Instructions issued by the Board of Trade distinctly inform Superintendents that they are liable.—Ed. *N.M.*]

CREW SPACES.—The Merchant Shipping Act, 1867, provides that all spaces occupied by seamen and apprentices and appropriated to their use, shall be kept free from cargo and stores; and allows deduction from tonnage when such space is so kept free, and is properly constructed, ventilated, and lighted. We learn that the Board of Trade and Board of Customs have recently in exercise of their power under the Act directed the tonnage of ships to be increased, and ships to be re-registered in certain cases in which cargo had been carried in crew spaces.

NOTICE OF ALTERATION IN EXAMINATION PAPERS.—After the 1st day of March, 1872, all candidates presenting themselves for examination for Master's and Mate's Certificates for the first time, will be required to give short definitions of so many of the terms contained in the list (A.), given in the January number of the *Nautical Magazine*, as may be marked with a cross by the examiner. These questions are, at the same time, intended to test the candidate's handwriting and spelling, to both of which special attention should be paid by him.

For the "Table of Deviations" which heretofore formed part of Form Exn. 7, the questions contained in the list (B.), also given in our January number, have been substituted. Candidates for Certificates of Competency as Masters Ordinary will be required to

answer at least eight of such of these questions as may be marked with a cross by the examiner. Candidates for First Class Certificates (Masters Extra) will be required to answer the whole of these questions.

PRIZE MONEY, COLUMBINE.—Notice is given to all persons interested therein, that preparations are now being made for the intended distribution of the tonnage bounty awarded for a slave dhow, the *Salamates*, captured on February 26, 1871, by Her Majesty's ship *Columbine*. Agents or other persons having any just and legal demand, unliquidated, against the said award are required to transmit the particulars of any such demand to the Registrar of the High Court of Admiralty, in order that the same may be examined, taxed, and allowed by that officer, and paid under the sanction of the Judge of the said Court. Due notice will be given, by future advertisements in the *London Gazette*, of the date proposed for the commencement of distribution; and at the same time the amount of an individual's share in the respective classes will be announced.

EXHIBITION AT THE HAGUE.—The Board of Trade have received a copy of a despatch from Her Majesty's Minister at the Hague, reporting that it is proposed to hold an Exhibition of Agricultural Implements and Machinery, at that capital, between the 21st and 30th September next. A copy of the programme containing the regulations and the list of prizes can be seen on application at the Board of Trade, Whitehall Gardens.

CONSTANTINOPLE.—Notice has been given that all vessels may henceforth pass through the Straits of the Bosphorus and Dardanelles at any hour of the day or night. To prevent vessels stopping to get their firmans at Constantinople on their passage down from the Black Sea to the Mediterranean, shipmasters may provide themselves, on their arrival from the Mediterranean, with the two necessary firmans, *i.e.*, the one for the Bosphorus and the one for the Dardanelles. These firmans must henceforth be delivered by vessels sailing for the Mediterranean on board a ship of war stationed at Galata Point, opposite Gallipoli. In order that shipmasters may avail themselves of the privilege of not being delayed on their passage home, they must take not only their Bosphorus and Dardanelles firmans at the same time, but must then pay all necessary dues and fees and take their receipts at Constantinople previous to their passing up to the Black Sea. In this way they

will avoid the necessity of stopping at the Bosphorus on their return from the Black Sea, except at Cavak or Buyukdere to take pratique.

ROUMANIAN PORTS.—The Board of Trade have received a despatch from Her Majesty's Agent and Consul-General at Bucharest, enclosing a law abolishing anchorage and modifying quay dues in Roumanian Ports. An English translation of the law is subjoined:—

Art. 1. No tax or other burden shall be imposed on navigation on the Danube, or its tributaries, throughout the whole extent of Roumanian territory. Similarly, no due shall be levied on merchandise carried in ships.

Art. 2. The taxes which are or have been collected in respect of anchorage are abolished.

Art. 3. In all Roumanian Ports, where there are quays completed or in course of construction, quay dues shall be taken; the same to be calculated upon the tonnage of the vessels, shallops, caiques, etc., without distinction of flag.

Similarly, a fixed rate shall be charged for the use of cranes, weighing-machines, and other machines intended for loading or unloading vessels.

Art. 4. All these dues shall be taken exclusively from vessels using the quays or any machines erected in the ports for the purpose of facilitating the shipping or unshipping of the cargo, without any distinction as to the port whence the vessel comes, or the cargo which she carries.

Art. 5. The dues imposed in conformity with the preceding articles shall be fixed in amount by a special law in such a way as to produce a revenue not greater than the cost of construction; and such revenue will be limited to the requirements of quay improvements, maintenance, and superintendence.

PANAMA MANIFESTS.—The Board of Trade have received a copy of a despatch from Her Majesty's Chargé d'Affaires at Bogota, relative to a decree of the Colombian Government, by which all manifests of vessels and invoices of goods arriving at the free ports of the Isthmus of Panama, are required to be certified by the Colombian Consul at the port of shipment, and stating that the Colombian Government has sent orders to the Consuls to deliver such documents free of charge as regards goods in transit. Those for consumption on the Isthmus, as well as those for the Colombian Pacific ports of Buenaventura and Tumaco, are paid for as heretofore.

SIGNAL STATIONS have been established at the undermentioned places, for the purpose of reporting ships of all Nations which make their names known by means of the International (Commercial) Code. On the Coasts of the United Kingdom.—Aldborough, Bridlington, Flamborough Head, Grimsby, Great Yarmouth, Broadstairs, Deal, Dover, Dungeness, Yarmouth (Isle of Wight), St. Catharine's Point (Isle of Wight), Prawle Point (four miles W. of Start), Penzance (Mounts Bay), The Scilly Islands, Roche's Point (Queenstown), Holyhead, Caldy Island (Tenby).

In the Colonies and in Foreign Countries—Straits of Sunda, Straits of Messina, Gibraltar, St. Helena, Ascension, Palais (Belle Isle), Cape Point (Cape of Good Hope), Helligoland, Skagen (N. of Jutland), Oxo (Christiansand), Elsinore, Sulina (Danube).

Ships, which on passing any of the above stations, hoist at the mast head the four flags which represent the name of the ship, and at the peak their ensign and code pennant, will be reported. Her Majesty's ships, and the officers at the Signal Stations, both British and Foreign, have no means of understanding signals made by any other Code.

SIGNAL STATION ON SKAGEN (THE SCAW).—A signal station has been established on Skagen (the Scaw) in connection with the Telegraph Station at that place.

The apparatus for signalling stands on a hill to the eastward of, and close to, the lighthouse. The station sends and receives messages from sun-rise till sun-set.

The signalling takes place by means of flags and distance signals according to the system of the Commercial code of signals for the use of all nations.

Vessels passing, which show their signals according to the above mentioned system, will daily at twelve o'clock be reported by telegraph to the exchange in Copenhagen, free of expense. They will likewise be reported every day by post to the Registrar General of Shipping and Seamen in London to be inserted in the London Shipping Gazette.

† The charge for signalling between the station and vessels at sea is seventy skillings (two francs) for twenty words, and thirty-five skillings (one franc) for every additional ten words. For the further transmission by telegraph the usual charges are made.

When the signal from a vessel is requested to be reported to the owner only, the signal is charged as a message of twenty words. The cost for messages from the Signal station to the owner is the usual rate for telegraph messages.

QUARANTINE NOTICES.—The Board of Trade have received the following notices respecting quarantine regulations :—

A despatch from Her Majesty's Chargé d'Affaires, at Rome, stating that in consequence of the existence of cholera at St. Jean d'Acre, and other parts of Syria, the Minister of the Interior has issued two decrees subjecting to 15 days' quarantine, on their arrival at Italian ports, ships which have left the Island of Cyprus, subsequently to the 19th of November last.

A quarantine notice of the Portuguese Government declaring the coast of Syria infected, and the Regency of Tripoli, in Barbary, suspected, from the 30th of November last ; also of a further notice declaring the Ports of the Danube, the Port of Archangel, and the other ports of the Gulf of the Dwina infected, from the 1st of November last.

A notice of the Portuguese Government declaring the Port of Charleston, in the state of South Carolina, free from yellow fever since the 20th of November last.

A despatch from Her Majesty's Minister at Madrid, stating that a circular has been addressed by the Spanish Government to the Governors of the maritime provinces (except Castellon, Gerona, Granada, Oviedo, and Seville), directing them to admit to free pratique ships arriving at the ports of their provinces with clean bills of health, without accidents on board and in a satisfactory hygienic condition, with the exception of arrivals from Galatz, Constantinople, the Ports of the Bosphorus, Salonica, Djeddah, and Fernando Po, which are alone to be submitted to rigorous quarantine ; and a copy of a despatch from Her Majesty's Consul at Copenhagen, stating that the Danish Government, by a notice of the 29th December, have declared the Port of Revel to be no longer considered infected with cholera, and that vessels arriving hence at Danish Ports will be at once admitted to free pratique.

THE DETACHED SQUADRON.—The following table shows the route of the squadron, and the dates at which letters may be despatched:

	Arrive.	Leave.	Letters may be despatched.
Simon's Bay ..	Feb. 26	Mar. 8	By Cape Mail on 10th and 25th January.
Bombay ..	April 28	May 9	<i>Via</i> Southampton every Saturday till April 13th.
Trincomalee ..	June 4	June 11	Every second Saturday, <i>via</i> Southampton, till April 27th.
Madras	June 17	June 24	<i>Via</i> Southampton May 11.

N

	Arrive.	Leave.	Letters may be despatched.
Mauritius ..	July 28	Aug. 4	By French packet about June 21st.
Simon's Bay ..	Aug. 29	Sept. 8	By Cape Mail 10th and 25th July, and 10th August.
The Azores ..	Nov. 6	Nov. 8	Via Southampton on September 9th and October 9th.

Letters to be posted on the day previous to the dates mentioned for transmission by the mails from London.

MARITIME LAW.

SITTINGBOURNE PETTY SESSIONS.—A mariner, of Rochester, appeared in answer to an adjourned summons charging him with unlawfully assuming the charge and conduct of a certain barque called the *Third of Juli*, and conducting the said barque after Charles Henry Beck, a pilot, duly qualified, had offered his services, the said barque then and there not being in distress, nor under any circumstances to make it necessary for the Master to avail himself of the best assistance which could be found at the time. The Magistrates considered the case clearly proved, and inflicted a penalty of £25, and £3 1s. 8d. costs, £6 to be allowed out of it as compensation to the complainant. A distress warrant was issued, and in default of there being sufficient effects or the money being paid, defendant would be imprisoned for three months.

THAMES POLICE-COURT.—**SEA WAGES**—The Captain of the *Lana* appeared before Mr. Lushington, to answer a claim for wages made by a seaman, who shipped at Falmouth (Jamaica), as cook at £8 per month. Mr. Lushington said the cook's incompetency was clearly made out, but it was a question whether the seaman's wages had been reduced according to his incompetency. There was no evidence that the Captain had improperly reduced the complainant's wages, and he dismissed the summons.

REFUSING TO PROCEED TO SEA.—At the Cardiff Police-court, on the 1st January, two sailors belonging to the ship *Eclipse*, were charged on remand with refusing to proceed to sea after signing articles. The case had been remanded for the purpose of a survey being made, as the prisoners stated that the vessel was un-

seaworthy. A former Custom-house officer had been authorised to examine the ship in question with the Captain. The Bench asked the Captain if he had noticed a hole to which the crew had stated that they called his attention, and he answered in the negative. The case was then dismissed, as the magistrates thought a proper survey had not been made.

IMPORTANT TO WOULD-BE MASTERS AND MATES.—The son of a Belfast gentleman well-known in Cardiff, was charged with having, on the 2nd of December, 1871, made false representations to one of the Examiners appointed by the Board of Trade, for the purpose of obtaining for himself a certificate of competency as Second Mate. It was admitted that the accused had never sailed in either of the two vessels which the application for a certificate stated he had sailed in for the required time of four years. Defendant's sole motive was to take himself off his father's hands. Unfortunately he had been foolish enough to put himself into communication with some of those people to be found at every large port ready to cram for examination, who had furnished him with these false certificates of service. After a few moments' consultation, the magistrates decided to inflict a penalty of £20, including costs, or two months' imprisonment. The fine was paid.

In reference to the case of the *Golden Flecca*, Justice Lush laid it down at the trial at Liverpool, "That if for any reason a ship starts in a condition not fit to encounter ordinary perils of the voyage, then the responsibility does not attach, and the Underwriter is relieved from the responsibility. That condition involves no consideration of intention or knowledge on the part of the insured. If the ship was not seaworthy there can be no claim on the policy."

BOARD OF TRADE INQUIRIES AT HOME.

1. *Queen of the Thames*, of London, stranded near the Cape of Good Hope, 18th March, 1871. Inquiry ordered June 2nd, 1871. Proceedings still pending.
2. *Maria Isabella*, of Yarmouth, and *Rock City*, Hartlepool. Collision near the Dogger Bank, 22nd September, 1871. Inquiry ordered October 21st, and commenced January 10th, 1872, at West Hartlepool, before two justices, with Captain Hight and Commander Prowse, R.N., Inspecting Officer of Coast Guard, Sunderland, as

assessors. The mate of the *Rock City* was held to be in default for great negligence in not keeping a look out. Mate's certificate suspended for two years. Master's certificate was returned to him.

3. *Windsor Castle*, of Aberdeen, and *Costa Rica*, of France. Collision twenty miles off St. Catherine's, Isle of Wight, 15th December, 1871. Inquiry ordered December 19th, and commenced January 4th at Greenwich, before D. Maude, Esq., Stipendiary Magistrate, with Captains Harris and Hight as assessors. Collision entirely the fault of the *Costa Rica*, and the Court had no hesitation in acquitting the captain of the *Windsor Castle* of all blame in respect of the collision, and exonerated him from any wilful neglect in rendering assistance to the *Costa Rica*, and, therefore, acquitted him of any misconduct or default.

4. *Thermutis*, of Liverpool, stranded on the Blackwater Bank 17th December, 1871. Inquiry ordered 29th December, and held 10th and 11th January, 1872, at Liverpool, before T. S. Raffles, Esq., Stipendiary Magistrate, with Captains Hight and Harris as assessors. Vessel lost by default of master for not using the lead; but in consideration of his antecedents, certificate was suspended for six months only.

5. *Hezibah*, of Whitehaven, stranded near Brook, Isle of Wight, 17th November, 1871. Inquiry ordered January 2nd, 1872, and held January 10th, at Swansea, before Messrs. J. T. Jenkin and R. P. Cameron, J.P., with Commander Elton, R.N., Inspecting Commander of Coast Guard as assessor. Ship lost by wrongful act and default. Master's certificate cancelled.

6. *Mary Nickson*, of Preston, stranded December 24th, 1871, on Rhoscollyn Bank. Inquiry ordered January 5th, 1872, and held at Liverpool before T. S. Raffles, Esq., Stipendiary Magistrate, with Captain Harris as assessor. Vessel lost by default in keeping so near the shore and for negligent steering. Master's certificate suspended for three months.

7. *Delaware*, of Liverpool, stranded December 20th, 1871, on the Scilly Islands. Inquiry ordered 28th December, 1871, and held 12th January, 1872, at Liverpool, before T. S. Raffles, Esq., Stipendiary Magistrate, with Captain Harris as Nautical Assessor, and Mr. R. Galloway, as Engineer Assessor. Vessel lost by being taken far too near the coast of Scilly in tempestuous weather. Court was of opinion that her power was not sufficient for her tonnage.

8. *Ino*, of Hull, stranded December 27th, 1871, on the Pater-nosters. Inquiry ordered January 10th, 1872. Proceedings pending.

9. *Alfredo el Grande*, of Newcastle, stranded three or four miles

N. of the Agger Canal on the 13th December, 1871. Inquiry ordered January 18th, 1872. Proceedings pending.

10. *Vienna*, of Sunderland. Collision with a schooner, name unknown, near the Dudgeon, December 12th, 1871. Inquiry ordered January 19th, 1872. Proceedings pending.

11. *Polyzema*, of Liverpool, stranded on Baginbun Head 12th January. Inquiry ordered January 19th. Proceedings pending.

INQUIRIES ABROAD.

1. *Veronica*, of Liverpool, inquiry held at Batavia, master's certificate suspended for twelve months; first officer's certificate suspended for three months; second officer to forfeit £7 from wages; crew to forfeit one and a half months' wages each.

2. *Rangoon*, of London, stranded and afterwards foundered on outer Cadda Rocks, Galle, 1st November, 1871. Inquiry held at Galle, before F. C. Willesford, Receiver of Wreck and J.P., with W. Blyth, Nautical Assessor. No lack of prudence or foresight on part of master or pilot could be discovered.

3. *Satara*, of Glasgow. Collision with the *Durger Salamed Savoy*, 13th October, 1871. Inquiry held at Bombay, before J. Cormon, J.P., and Captain J. Dixon, Surveyor to Lloyd's. Captain or officers of the *Satara* could not justly be blamed for any failure or neglect of duty.

4. *Defiance* stranded on coast of Natal, 6th October, 1871. Inquiry held at D'Urban, 28th October, 1871, before Resident Magistrate, Collector of Customs, Acting Port Captain, Surveyor of Vice-Admiralty Court, Masters of *Burton Strather* and *Kate Fatham*. Loss of vessel not attributable to incompetency, neglect of duty, or carelessness of captain or crew.

5. *Aunt Lizaie*, of Sunderland, stranded on English Bank, Monte Video, 8th November, 1871. Inquiry held on board H.M.S. *Cracker*, at Monte Video, before the Commander and Navigating Sub-lieutenant, and the Master of the *Bessie Morris*, London. No blame attached to master, but a second stranding can only be accounted for by supposing it to have been intentional on the part of the person engaged to rescue her, but it could not be proved.

6. *Bredalbano*, of Leith, stranded twenty-four miles S. of Jeddah, on the 24th April, 1871. Inquiry held at Jeddah, before the Acting Consul and Masters of the *Juthel Allah*, *Tuthool Cureen*, *James Shepherd*, and *William Chandler*. Vessel stranded through impudence of master. Court suspended his certificate for three months.

7. *Blairmore*, of Melbourne, stranded near Sourabaya, 3rd March, 1871. Inquiry held before the Victoria Steam Navigation Board. Vessel stranded through error in judgment in not sooner hauling to the eastward after passing Gengraagts Reef. Master cautioned to be more careful in future.

8. *Anne*, of Hong Kong, stranded at Kelung, 9th August, 1871. Inquiry held at Tamsuy, before the Commander, Lieutenant, and a Sub-lieutenant of H.M.S. *Elk*, and of the Consul at Tamsuy. No blame attributable to master or crew.

9. *Tartar*, of London, stranded on Haclan Island, 6th October, 1871. Inquiry held at Pagoda Anchorage, 25th October, before the Commauder of H.M.S. *Elk*, T. R. Sandiland, Acting Lieutenant, R.N., S. L. Shaw, Marine Surveyor, and the Master of the *Devana*. Vessel lost through bad weather, but the master was held to blame for having no officer's watch kept during the night. Vessel dragged twelve miles without being observed.

ROYAL NAVY AND ROYAL NAVAL RESERVE.

PROMOTIONS.

Staff-Commander—William F. Rowe, 1861.

Navigating Lieutenants—John N. Compton, 1865; Thomas H. Flood, 1866; Walter S. Chambré, 1866; Robert Harwood, 1866; and Richard G. Roe, 1866.

Surgeons—Henry A. Close, 1859; Joshua P. Courtenay, 1860; George A. Campbell, 1860; and Daniel R. Alcock, 1860.

Paymasters—Frederick A. Codd, 1859; Francis Woods, 1860; William A. Brown, 1860; and James H. Wallis, 1860.

APPOINTMENTS.

Admiral Sir George Rodney Mundy, K.C.B., will succeed Admiral Sir James Hope in the command at Portsmouth.

Captains—St. George D'Arcy Irvine, 1867, to *Euphrates*, vice Charles T. Carne, period of service expired.

Commanders—Edward H. Seymour, 1866, to *Vigilant*; Henry F. Stephenson, 1868, to *Victoria and Albert*, vice Hugh Campbell, promoted; Robert L. Byng, 1863, to *Caledonia*; Francis M. Ommanney, 1869, to *Resistance*.

Lieutenants—Yelverton O'Keefe, 1864, to *Vigilant*; Rowland M. Sperling, 1861, from *Monarch* to command gunboat *Coquette*; Albert J. O'Rooke, 1866, to *Aboukir*; Arthur Bloxsome, 1866, to *Pembroke*;

Hugh C. Ryder, 1867, to *Impregnable*; William M. Moger, 1862, to *Implacable*.

Navigating Lieutenant—Edwin H. T. Behenna, to *Vigilant*.

Lieutenant Royal Naval Reserve—John Findlay (Honorary).

Sub-Lieutenants—Charles Q. R. Craufurd, to *Vigilant*; Robert D. B. Bruce, to *Ariadne*; Alfred G. Waller and Henry Sandford, to *Trafalgar*; Robert R. M. Hall, to *Coquette*; Edward G. Elwes, supernumerary to *Vigilant*.

Navigating Sub-Lieutenant—Francis H. B. Snel, to *Coquette*.

Midshipmen—Charles E. Hawker, supernumerary to *Sultan*; Francis J. Foley, Henry B. Molesworth, and J. B. Grant, supernumeraries to *Lord Warden*; Houston Stewart, supernumerary to *Minotaur*; W. R. B. Mellor, to *Narcissus*.

Chief Engineers—William Eyres, 1856, to *Asia* from *Royal Oak*; William M. Chambers, 1861, *Pembroke* (additional for *Rupert*).

Engineers—Robert Sutherland, 1868, to *Crocodile*; James Bannerman, 1861, and John Runnals, 1870, to *Coquette*.

First Class Assistant Engineers—Henry J. Coope, to *Coquette*; Richard Sennett, to *Fisgard*, for service at Admiralty.

Surgeons—William R. Bennett, 1866, to *Princess Charlotte*.

Assistant Surgeons—John McCarthy, to *Resistance*; W. D. Wodsworth, to *Vigilant*; William Redmond, to *Pembroke*, for service in Chatham Dockyard; Henry A. Close, to *Audacious*; Ernest A. Hudson, to *Coquette*.

Paymasters—Henry Sewell, to *Archilles*, vice Barnes; William Rhodes, to *Reindeer*.

Assistant Paymasters—Gilbert J. Vaux, to *Vigilant*, in charge; John B. Creagh, to *Coquette*.

RETIREMENTS.

Commander—Edward Stubbs, 1863.

Chaplain—Henry Alexander, 1854.

DEATHS.

Captains—Right Hon. William Lord Kensington, 1856 (*retired*); William Armytage, 1860; Thomas K. Mackenzie, 1870 (*retired*).

Commanders—John James Kerr, 1864 (*retired*); William Crichton, 1865 (*retired*); Henry Golden, 1871 (*retired*).

Lieutenant William F. A. Harris, 1856.

Paymaster—William Morgan, 1841, 29th December, 1871.

CONSULAR APPOINTMENTS.—The Queen has been graciously pleased to appoint John Prat, Esq., now British V.C. Barcelona, to be H.M. Consul for Galicia and Asturias, to reside at Corunna.

December 29th—The Queen has been pleased to approve of the following gentlemen as Consuls for the German Empire, viz., Otto Trechmann, Hartlepool; J. Stuart Day, for the Isle of Wight, including the roadsteads of Yarmouth, Lymington, the Mother-bank, St. Helen's Road, and Bembridge Haven: and of the following Vice-Consuls—Philip Douglas Alexander, Bristol; Joseph Farrell, Dundalk and Drogheda; William Marshall, Great Grimsby; James Cathie Scarth, Kirkwall, Stromness, and Longhope; William Davies Matthews, Penzance, Mounts Bay, St. Ives, and Hayle; and Joseph Strangman, Waterford, New Ross, Wexford, and Dungarvan.

The Queen has also been graciously pleased to appoint the Hon. Edmund John Monson, now H.M. Consul at the Azores, to be H.M. Consul-General at Pesth, with jurisdiction in all the territories belonging to the Kingdom of Hungary. The Queen has approved Don Adolfo Lecouteur as V.C. at St. Helier, Jersey, for the Argentine Republic.

The following examiners have passed an examination in compass deviation:—John Williams, Aberdeen; Lieutenant Albert Dent, R.N., Belfast; Captain Thomas Brooks, R.N., Bristol; Captain S. P. Townsend, R.N., Cork; George Dott, Dundee; Captain Andrew Small, R.N.R., Glasgow and Greenock; Lieutenant William Congalton, R.N.R., Hull; A. C. Mott, R.N.R., and J. Garnock, R.N.R., Liverpool; Captain John Gillie and Captain M. Cay, Jun., Newcastle and Shields (North and South).

The Examination of the above officers was conducted by Mr. Towson, of Liverpool, and Captain Trivett, R.N.R., London.

THE FOLLOWING REWARDS HAVE BEEN GRANTED BY THE BOARD OF TRADE SINCE 1ST JANUARY, 1872.

To Captain Henri Boulon, of the French barque, *J. A. de Rudder*, a handsome telescope, in recognition of his kindness to seven of the crew of the brig *Eleanor* of Rochester, whom he rescued from their disabled vessel on the 21st November, 1871, at sea.

Captain T. Sabatier, of the French ship, *Omer et Julie*, a gold watch and chain, for his great kindness to the first officer and seven seamen of the *Taeping*, of Glasgow, whom he picked up at sea on the 29th September, 1871, landed at Batavia on the 17th November, and for whose subsistence he declined to be repaid.

To Captain Thos. C. Hicks, of the barque *Floride*, of Liverpool, a handsome binocular, for having on the 20th September last,

rescued three survivors of the crew of the barque *Mary Davidson*, from the Falkland Island Rocks.

To Captain E. C. Roach, master of the barque *M. E. Corning*, of Yarmouth, N.S., a handsome binocular, for having rescued on the 19th September, 1870, six survivors of the barque *Oudara*, of Milford, at sea.

The President of the United States has presented a ship's chronometer to Captain John Herbert, of the British brig *Juanita*, of Liverpool, for rescuing the crew of the American vessel *Julia S. Carney*, abandoned at sea.

GENERAL.

LIFE-SAVING CORK MATTRESSES.—Most of our readers are aware that a proposal has been submitted to the Admiralty for the use of hammock mattresses stuffed with granulated cork, instead of hair mattresses, on board the ships of the Royal Navy, with a view to saving life in case of shipwreck, or of the vessel sinking from any cause. Rear-Admiral A. P. Ryder and Captain J. R. Ward—both members of the Council of the Royal National Life-boat Institution—have taken the lead in recommending this improvement. Patterns have been sent by the Admiralty to the Channel Fleet, to be tried for comfort. The mattress has a buoyancy of 60 lbs., that is to say, it will float an iron weight of that amount, and after 24 hours' immersion under water, the buoyancy is found to be very slightly diminished.

In the opinion of many practical men a cork mattress if properly used will do more to save life at sea than any other means. After collisions, for instance, a cork mattress will be invaluable, as it affords a ready and a certain means of safety until boats can be lowered. The construction and appearance of these mattresses will be understood by a reference to the accompanying illustrations.

The report of Admiral Porter on the United States Navy, which we publish elsewhere, presses the subject on the attention of his Government with as much ardour as Admiral Ryder and Captain Ward are pressing it on our own. The Mercantile Marine will probably not be behindhand in substituting healthy, cheap, and safe cork mattresses for the abominable fusty things too often seen in forecables.

YACHT BUILDING.—Mr. John White, of the Medina Docks, West Cowes, is now laying down for Mr. John Duncan Lee, of Northwood House, Commodore of the New Thames Yacht Club, a fine Schooner Yacht of 120 tons. We understand that Mr. White has determined to devote once more a portion of his attention to this branch of his business. From the prestige he has already won as a naval architect, as evidenced by the large number of men-of-war, merchant ships, and yachts, which he has already constructed, we have no doubt he will sustain the great reputation he has won.

The boats of the *Royal National Life-boat Institution* cannot be everywhere at once; and we learn that many coastguard men have been drowned in putting to sea in common boats to assist wrecked crews. We are therefore glad to hear a rumour that Mr. White is to build some more coastguard life-boats. Of these boats a representation is given in our illustration.

ROYAL NATIONAL LIFE-BOAT INSTITUTION.—A meeting of this Institution was held on the 4th January, at its house, John Street, Adelphi; T. Chapman, Esq., F.R.S., V.P., in the chair. Rewards to the amount of £298 were granted to the crews of various life-boats of the institution for going out on service during the past month. The Pakefield No. 2 life-boat, during a gale of wind and squalls of snow, saved the crew of eleven men from the fishing lugger *Musselburgh*, of Lowestoft, which had gone ashore. About the same time the life-boat at Palling helped to bring ashore the crew of the schooner *Samuel and Ann*, of Yarmouth, which became a total wreck. The Great Yarmouth No. 1 life-boat went off to the brig *Champion*, of Shoreham, which had got on the Corton Sands in a very heavy sea. The Whitby life-boats saved the crews, numbering eighteen men, from six fishing cibles which had been overtaken by a heavy gale and sea which had suddenly sprung up. The Rye and Winchelsea life-boats saved the crew of seventeen men from the stranded barque *Robina*, of North Shields. The Great Yarmouth No. 2 life-boat, in conjunction with a steamer, saved the distressed brig *Azela*, of Blyth, and her crew of eight men. The Ramsgate and Kingsdowne life-boats saved the crew of the barque *India*, of Shields, which became a wreck on the Goodwin Sands; the Kingsdowne life-boat, while searching for the vessel in distress, had to cross and recross the Goodwin Sands four times, and she was repeatedly filled by the tremendous seas, which were, however, speedily self-ejected through the valves with which the institution's self-righting boats are provided. The same day the crew of another large barque, the *Albert*, of Bremen, wrecked on

the same sands, were saved by the North Deal life-boat. The smack *Charles Philip* was in distress near Swansea during a heavy gale. The Swansea life-boat went off and made her secure, and brought the crew of three men ashore until the storm abated, when they returned to their vessel, which had fortunately held to her anchors, and was saved. The Maryport life-boat brought ashore the crew of the stranded brig *Wanderer*, of that port. The Aldborough life-boat went to the aid of the schooner *Rose*, of Ipswich, and her crew of four men were, however, safely taken to Harwich. The Clovelly life-boat saved the crew of seven men from the schooner *R. B.*, of Bayonne, the Newquay (Cornwall) life-boat saved eleven men from the Greek brig *Calamadis*; and the Gorleston life-boat five men from the schooner *Sybil*, of Yarmouth. Various other rewards were also granted to the crews of shore boats for saving life from wrecks on our coasts. During the past year the institution had contributed by its life-boats, and other means, to the saving of 888 lives from shipwreck. Various contributions were announced as having been sent to the society. New life-boats were ordered to be sent to Tynemouth, Northumberland; Whitby, Yorkshire; and Pakefield, Suffolk; the first named boat being appropriated to the Ancient Order of Foresters, and named the *Forester*.

THE Rocket Apparatus at Fethard, belonging to the Board of Trade, has during the past month been the means of saving 19 of the crew of the *Polyxena*; and at Aldborough, Suffolk, 7 of the crew of the *Energy*. Abroad the Rocket Apparatus saved 6 of the crew of the *Phoenix*, wrecked on the European coast of the Black Sea. The Apparatus at Gibraltar saved 11 of the crew of the *Orilla*, wrecked near Europa Light; and at Oamaru Bay, New Zealand, 11 of the crew of the *Premier*.

THE CAPTAIN RELIEF FUND.—On January 1st, the final meeting of the General Committee of this Fund was held, Admiral Sir James Hope, G.C.B., Commander-in-Chief, presiding. The total amount of subscriptions received, with interest on the deposit account, is £57,824 11s. 11d., of which, the handsome contribution of £1,000 was received through Sir William Mitchell, the Proprietor of the *Shipping Gazette*, being the result of his appeal to the Merchant Service generally, both at home and abroad. A resolution was adopted strongly commending to the favourable consideration, sympathy, and support of the public, and the Naval Service in particular, a proposal to establish a Royal Naval Relief Fund, under the management of the Commissioners of the Patriotic Fund.

SALE OF WOOLWICH DOCKYARD.—That portion of Woolwich Dockyard not required by Her Majesty's War Department was sold on the 10th ultimo, by public auction. The portion of the dockyard thus disposed of is on the east side, adjacent to the centre of the town, and comprises upwards of four acres, including wharfage and warehouses, with a frontage to the river of 800 feet. The property was divided into four lots. The first was sold for £6,750; the second was withdrawn, as there were no offers; the third realised £3,950; and the fourth, a leasehold detached house, formerly used as a residence in connection with the Compass Observatory, was sold unreservedly at the nominal sum of £40!

A MARINE NOVELTY.—A new iron steam vessel, of peculiar design and novel arrangement, has been constructed by Messrs. W. Simons and Co., of Renfrew. It is the property of the Canadian Government, and is the first vessel of this description ever launched. It combines in itself the respective properties of a powerful dredger, a steam hopper barge, and a screw tug steamer. It is intended to keep the harbours and rivers of North America clear of silting and obstructions. The mode of working is as follows:—The vessel propels itself to the places requiring dredging; it is then moored by the steam winches to the guide buoys at both bows and quarters; the dredging girder is then lowered to the bottom by steam; the machinery connected therewith is then set in motion and drives a range of steel mounted buckets, which cut, lift, and deposit into the vessel's own hopper cavity about 200 tons of soil. On the vessel being loaded, the girder is raised flush with the deck, the moorings are disconnected from the buoys, and the vessel assumes the properties of a screw steamer. Another connection of the machinery is then put into gear, driving the propeller. The pilot takes his station at the rudder, and the captain on the bridge, the dredging crew convert themselves into sailors, and the vessel steams away to deep sea water, say from ten to twenty miles, at a speed of eight knots per hour, where, by another arrangement of the steam machinery, the hopper doors open and the 200 tons cargo is in a moment dropped in thirty or fifty fathoms depth of water. The bottom doors being then closed, the steamer returns for another cargo.

THE *Maria Emilia*, of Sweden, a brigantine of 111 tons, loaded with salt, has foundered in the Atlantic. The vessel was over-run with rats, and the leakage causing her to founder is conjectured to have been caused by a hole having been eaten through the bottom by them.

COAST AND HARBOUR DEFENCE.—We are glad to observe that the soundness of the views we have so repeatedly expressed, viz.,—that we should have numerous small fleet armed vessels with very heavy guns,—has been partially acknowledged, and that our dock-yards are actively employed in building these craft. We have now no fewer than eight of these composite gunboats building at Chatham, viz., *Badger*, *Aerial*, *Frolic*, *Fidget*, *Rifleman*, *Kestrel*, *Ready*, and *Zephyr*. Every effort is being made to forward this little fleet and it is expected they will be launched very early in the coming financial year.

We may repeat what we have in effect advanced in a former number,—that when we have two hundred such vessels, we may well look up and consider we have not only the door shut but locked!

COMMUNICATION BETWEEN ATLANTIC AND PACIFIC OCEANS VIA THE NORTH AMERICAN LAKES.—At length the first decided and successful step has been taken towards connecting the extremity of the “line of the Lakes” with the Pacific Ocean. A railway is already completed reaching from Duluth, at the head of Lake Superior, right through the State of Minnesota, to the banks of the Red River. From the banks of the Red River to the foot of the Rocky Mountains, and through or across that rocky barrier to the shores of the Pacific, will be the work of the future, and is now but a work of time. This advance towards a truly great achievement has been made by the Northern Pacific Railway Company. Apart from the ultimate object of opening a passage by rail across the American Continent to the Pacific, the line of railway which has been so recently completed will afford a new means of transit for the Grain Trade, which has hitherto taken the way from Manitoba in the north-west to St. Paul, as the Port of shipment, at the heavy cost of waggon transport. Duluth, on Lake Superior, will, it is expected, henceforth be the Port of shipment for millions of bushels of grain, which it has been hitherto necessary to send hundreds of miles further on before shipment was possible. The grain shipped may find its way down the course of the Lakes, and so into the St. Lawrence and to New York, or, for that matter, to Liverpool. But this is a subsidiary result of the great undertaking to the completion of which all the energies of the Northern Pacific Railway Company are said to be directed—namely, the completion of the communication between the Oceans—a work now demonstrated to be not only practicable, but feasible, and comparatively easy of execution.—*Shipping and Mercantile Gazette*.

STEAM-SHIP LAW IN THE UNITED STATES.—Our intelligent and ably conducted contemporary in the United States, the *Nautical Gazette*, contains an abstract of a new law respecting the survey of steam ships and the safety of passengers. We are glad to find that the very first clause of the new law proposes that no fee shall go to the person who informs the Government of breaches of the law. We do not forget that shipowners have been subjected to all sorts of heavy impositions and exactions on the part of informers in the United States, who often make proposals to recover hush money for not laying information. We are also glad to see that metallic life-boats are placed in a prominent position. As life-boats which often have to be carried near the funnels of steamers they are valuable; but we doubt the policy of requiring by law that any boat or contrivance of a named material or manufacture shall be carried, to the exclusion of others. As regards the minute system of testing and stamping boiler plates and boilers we are altogether at variance with the American law. We think, and we say this with a full knowledge of the English Acts of Parliament, that the United States law applicable to steam-boats proceeds on the wrong footing altogether. It makes owners of ships responsible for not complying with the regulations, rather than for blowing people up. The United States law provides that the master and the vessel, or either, shall be responsible to the full amount of damage, if explosion, fire, or other disaster happen through neglect or failure to *comply with the regulations*, or through *known* defects or imperfections. We cannot, however, understand how there can be more compliance with the regulations, or any “known” defects in the face of the minute surveys required, and the certificates issued to the surveyors that the regulations have been complied with. The case amounts to this, viz., that the owner to go free has to prove that the regulations were complied with, and then to leave others to prove “known” defects. It is always easy to prove that regulations are complied with, because the certificate of the surveyor proves that. We would rather leave the owner free from all the minute and vexatious regulations, and then say to him after accident, “Don’t prove that your ship and orders were certified, but prove that the accident arose from causes over which you had no control, or from defects, etc., you had no means of remedying.” The limitation of liability to the value of the vessel is a step in the right direction and is following our law; but we do not see why an express provision is necessary to the effect that nothing in the Act shall in any way affect any policy of insurance. We hope shortly to refer to the whole subject at length.

ANOTHER BIRTH.—The Woolwich infant has a brother! A second 38-ton gun has been safely put out of hand at our unrivalled Gun Factory at Woolwich, and before very long we shall have an interesting family of these infants, as there are now thirteen of them in various stages of completion at the Arsenal. A rather costly family we fear, but one for which—like a human family of the same length—we hope to get a good return. They are not only intended for coast defence but also for vessels. In referring to the accident or damage done to the first of the family which has not been put under fire since the flaw in its internal coating was discovered. We may express a hope that some definite mode of treatment will be decided on by which these very expensive infants may cease to give trouble when they leave the nursery, for they are often tested in exercise to an extent to which in after life they will never be subjected.

THE GATLING GUN.—Another and not less wonderful and, in its way, not less destructive piece of artillery has been received at Woolwich, and although not intended for sea-service will doubtless be supplied to ships. The one to which we allude is the first completed of a number ordered. This formidable weapon by means of the eight drums for feeding it, will be enabled to launch at the enemy 3,200 balls without extraneous assistance.

BOARD OF TRADE.—Sir Louis Mallet, K.C.B., one of the assistant secretaries to the Board of Trade, has we learn retired from the Commercial Department of that Board. He is, we hear, appointed a member of the Indian Council with an additional salary. It appears from a circular just issued by His Grace the Duke of Argyll, that an "eminent man" unconnected with the Indian Service, was recently made a member of the Council, and that now his Grace has advised the appointment of Sir Louis Mallet to the same Board. These two appointments are intended to be re-assuring to commercial men that commercial interests shall be ably represented in Indian Council.

THE FRENCH COMMERCIAL TREATY.—The French are a curious people. In some things they excel other people, but in matters of common sense they are ingeniously but lamentably deficient. If there was one thing above others that maintained the French Empire under the third Napoleon, it was the Commercial Treaty.

That Treaty kept ports open, trade brisk, and commerce flourishing. Now, however, the French nation utterly oblivious to the causes which led to continual prosperity under the Empire, are about to bring the treaty to an end, and at the same time to cripple their own mercantile navy by undue taxation. We have shown in a former number of the *Nautical*, that the Commerce of the Dutch Republic was ruined by taxes imposed on the mercantile navy to support their wars; yet, with this fact staring the Republicans of France in the face, they are about to commit a similar act of folly. And when in addition to this, we bear in mind that French ships alone cannot even now, by any possibility, carry on the French Shipping Trade, the Act contemplated by the Government of M. Thiers is past comprehension. On the one hand, he is about to cripple the trade carried on in French ships, and on the other hand, he proposes to trammel, and perhaps exclude, foreign ships. We await the result with interest, but we have a strong presentiment as to what that result must be.

TO SUBSCRIBERS.

IN our March number will appear the first of a series of "Fok'sle Yarns." These yarns were spun aboard the good ship *Ocean Wave*, and have been expressly collected and arranged for the *Nautical Magazine*, by Mr. Wm. F. Peacock, Author of "What I saw in the Golden Valley;" "The Buried City of Uriconium;" "Four Months with Mad Men and Mad Women;" "Under Lock and Key;" "Passages in the Life of an Author," etc., etc. Yarn No. 1 will be "Poor Cousin Jack."

NOTICE.—If any difficulty is experienced in obtaining the present or any back Numbers of the *Nautical Magazine*, a copy can be obtained (in return for 13 stamps) of Mr. J. D. Potter, 31, Poultry, London, E.C.; Mr. Mitchell, Bookseller, Parliament Street, Westminster; Messrs. Stanford, 6 and 7, Charing Cross, S.W., or of any of the Firms included in "Our Directory," on the back of the Title page. Any complaints of non-delivery should be at once addressed to the Editor, *Nautical Magazine*, at No. 60, late 1, Vincent Square, Westminster, S.W.

THE
NAUTICAL MAGAZINE.

NEW SERIES.

MARCH, 1872.

TRIBUNALS OF COMMERCE.

By THE EDITOR.

THERE is amongst most persons, but pre-eminently amongst commercial men, a feeling of discontent with the means provided by the Legislature for the settlement of commercial disputes.

Under our present system, or rather absence of system, delays, expenses, and uncertainties beset the suitor at every turn. But this is not all, for, besides delays and expenses, unfitness and even incompetency on the part of the Tribunals appealed to, are unmistakeably and repeatedly making themselves apparent.

The forecast of the opening year, places social questions in the van of legislation, and amongst these questions there is none more ripe for consideration than that of providing for the necessities of the times by reform in commercial law. We are not a nation given up to ideas; but, as passing observers have found and depicted us, we are possessed of a homely plodding mode of thought; and thus it is that we are slow to make experiments, and are still slower in adopting schemes perfected by foreigners. Were this not so, the present year of grace, 1872, would not find us in so barbarous a condition as we are, in our arrangements for settling commercial disputes.

It is now time that we, as a nation, put our shoulders to the wheel. We should no longer rest until we have obtained the establishment of proper courts, and reasonable methods of procedure for commercial cases. If we desire to establish a precedent for what we are about to advocate (and the legal mind will certainly not neglect to ask for one), we can revert to the days when Venice was the "Queen of the Adriatic," and when "Genoa the Superb" had given to the world the greatest of all navigators.

The Code Napoleon has gathered under its ample folds many old crude ideas, and has given them out in a re-invigorated form in the Code Civile of France. Other countries have followed her example. Amongst ourselves an association was formed in 1851, with that distinguished lawyer, the late Lord Brougham, as its president, to induce the Government of that day to establish Tribunals of Commerce. The agitation then commenced, did not, unfortunately, prove sufficient for the purposes intended. It has been prolonged faintly and weakly: and the result of the inquiries recently instituted, conveys only just so much comfort as may be found in the recommendations of the recent Select Committee of the House of Commons. From the evidence of the representatives of the Mercantile Marine on that Committee, the country at large may learn how important to that interest would be the establishment, at every large seaport town, of Tribunals, armed with the powers of summary procedure. From the nature of business depending upon the contingencies of shipping, innumerable disputes must inevitably arise, and these disputes are such that no judge, whose experience is confined to law alone, and no ordinary jury can decide; and, besides this, great inconvenience is often caused from the case being tried ultimately at a distance, where the witnesses and lawyers must all be paid to attend.

We find influential and practical men at the large centres of trade and manufacture, such as Manchester, Birmingham and Bradford, pressing, and pressing urgently, for some great revision of the existing means of settling disputes. If these inland places suffer on account of the non-existence of proper Tribunals, what must be the case in seaport towns?

In inland places the evils are nothing like so great or so serious as at the seaports. At the former places the witnesses, as a rule, are on the spot, whereas with the shipowner, his property is floating, and his servants are here to-day and gone to-morrow. If he is compelled to go to law in the Superior Courts, he has probably to detain the officers and crew of his ship for months at an increased cost, and simply from the impossibility of doing so, persons interested in ships and shipping cases are prevented

from bringing forward many good claims that might otherwise be substantiated.

Nothing appears more striking throughout the whole of the inquiry lately held, than the observations of the French Consul at Liverpool, Boisselier, upon the injurious effects and the hardships entailed upon strangers, who are not, as we are, in blissful ignorance of anything better than our courts, but are well able to make contrasts most damaging to our intelligence by comparing the facilities provided for procedure in the courts in this country and in their own. M. Boisselier cites a case then going on, where a French vessel that came into Liverpool from a long sea voyage had to undergo some repairs. She did undergo the repairs, and meanwhile she took a new charter, she loaded, and the captain paid about half the expense incurred, but could not pay the remainder. Then the tradesmen who had provided the sails, ropes and necessaries, arrested the ship. She was arrested, not in Liverpool, but in London, by the Court of Admiralty. Although two months had elapsed literally nothing had been done, neither the sale of the vessel nor any movement on either side. As French Consul, M. Boisselier had to put in a claim for the wages of the crew, who were kept all the time without their money, and this while one set of lawyers were at work in London and another in Liverpool.

Had such a case, so says M. Boisselier, gone before one of the French Tribunals of Commerce, it would have been disposed of in three or four days, because there, experts would have been at once appointed to examine if the repairs had been well done, and those experts would have made their report to the commercial judge, who would have decided at once and upon the spot. But here in England, the Frenchman pathetically pointed out that more than two months had already elapsed, and the case was not more advanced while he was making his statement than it was upon the first day when the dispute arose.

With these and other facts placed before them, the Select Committee have everything in their favor in recommending to the House that, "A Tribunal of Commerce should be established in such of the large towns throughout the country as might be selected as centres of surrounding districts, having regard to the population and commercial activity of each district, and that the court should be composed of one member of the legal profession as the president, and (here is the gist of the recommendation) two members selected from the commercial classes for the office of commercial judges, with a registrar to carry on the routine business of the court."

Whether this system, recommended by the Select Committee, or whether any other proper system is now adopted, depends, we are glad to say, not so much upon the legal profession as upon the prompt and vigorous action of the Chambers of Commerce and the representatives of trade and shipping in Parliament. We know that many persons do not altogether like the idea of separate Tribunals of Commerce. They are said to work well in France and other countries where the business is nothing compared to ours; but with our immense and pressing business, many persons would rather see the present courts extended and remodelled and the procedure simplified than have separate Tribunals. We think that by a judicious reformation and extension of our courts, and the appointing of competent, practical men as assessors to assist the judge, a proper system would probably be established.

Although we hear strong murmurs from Liverpool that the Vice-Admiralty Court there, the "Court of Passage," is not so good a court for the settlement of wages disputes, &c., as the Magistrates Court, yet, on the whole, the successful exertions of Mr. Norwood, M.P. for Hull, in conferring on County Courts Admiralty jurisdiction, is looked on as an important step in the right direction. The Admiralty Court itself furnishes a precedent for appointing a judge with assessors who are up to their work. And if all courts which have to try technical subjects were (instead of being obstructed by juries of greengrocers, undertakers, publicans and other tradesmen) assisted by assessors on similar footing to the assessors in the Admiralty Court, our wants would in a great measure be met. With the formation of such competent courts at each commercial centre, other improvements would have to be brought about, and amongst them some alteration in the present absurd law as to evidence is especially necessary. We know that we shall rouse the indignation of lawyers by saying this, but we say with confidence that in no case that we have ever heard of, has injustice been done by admitting statements in evidence, whilst gross injustice is often done by rejecting them on mere technical grounds.

We trust that the commercial interest, by their representatives in Parliament, will now work together with a will. They have everything in their favor. They can urge that in 1872 England is denied facilities for settling commercial questions, facilities which Italy, so long ago as the middle ages, and Belgium, France, Hamburg, and even Turkey and Eastern Europe, have found it possible to provide.

ANCIENT GALLEYS AND THEIR MODE OF PROPULSION.

By W. S. LINDSAY.

(Continued from our February Number.)

But these assertions, though they increase the difficulty of solving the intricate problem of how galleys, with more than one bank of oars, were propelled, can have no weight when opposed to practical experience. It is clear, without any testimony beyond our knowledge of the physical power of man, that no one man, however herculean, unless he had the aid of machinery, of which there is no proof, could work an oar in the manner described. Therefore, without searching for proofs in support of these views, we may dispose of this part of the subject by remarking that in ancient galleys of every description above the smallest uniremes, more men than one were frequently employed upon the same oar. Such was the case in the celebrated Liburnian galleys, already described. Indeed, Pliny distinctly states that the galley of Caius had forty oars on each side, and five rowers to each oar. And from the writings of Suetonius it appears that the galley built for Caligula had no less than eighty oars on each side, with "ten men to an oar,"—in all, sixteen hundred rowers.

Here the question arises how many men could, with convenience, sit on each bench? Presuming that in the case of an oar fifty-seven feet in length, one-third or nineteen feet should be within board, there would, allowing fifteen inches for each rower, be space for fifteen men to work at the one oar; and if the men who sat within six feet of the row-port were of no service, there is still ample space left to place ten effective rowers. Although various interpretations may be put on the poetical language of Homer, and it is not easy to understand what is meant by some of his references to the mode of propelling galleys in his day, nevertheless, five men would appear then to have been frequently stationed at one oar, seated on benches seven feet in length, and in all such cases, the handle of the oar, for the effective working of the galley, required to be twelve feet in board from the row-port.

In comparatively modern times, when rowers were by no means crowded, eighteen inches for each was considered more than sufficient, and there can be no doubt whatever that five men to an oar was far from an unfrequent practice in manning the State galleys of the Italian

Republics. But while there is no difficulty in understanding how five, or even ten, men could be rendered serviceable in working the oars of single-banked galleys, a great difficulty arises when we enquire how that number of men did effectually handle the upper bank oars of the quadriremes and quinqueremes. On these and on many other matters, the accounts of the ancients are conflicting; nor do the imperfect illustrations on ancient monuments and on coins materially assist in the elucidation of some of these intricate questions. Assured of the fact that there were many vessels of much larger dimensions than even quinqueremes propelled by oars, we have to consider *how this was done*. Now the only mode of arriving at correct conclusions on this, the most conflicting and intricate of all the problems connected with shipping, which ancient authors have left for solution, is to trace the progress of the galleys themselves, from the single-banked galley, or *unireme*, upwards.

SINGLE-BANKED GALLEYS.

With the exception of the extraordinary Liburnian galleys, of which a drawing has already been furnished, every account extant leads to the conviction that the single-banked galleys of the Venetians and Genoese resembled in some respects the galleys of the Romans and ancient Greeks. Drawings of these Venetian galleys, to which references will hereafter be made, have been preserved, but as no detailed account of them exists, we are obliged to seek for information from a writer of comparative modern date.

FRENCH GALLEY.

In its leading features, the French galley, constructed somewhere about the close of the seventeenth century, would appear to have resembled those of Venice and of Rome of a similar class. She is described as having been one hundred and fifty feet long and fifty feet broad; but there is evidently a mistake in the description of her width, as there is no record of any war galley, either ancient or modern, where the length was only three times the breadth of beam. They were invariably from five to ten times longer than they were wide. All writers on the ships of the ancients or of the middle ages are agreed upon this point; nor is there any account of a vessel propelled by oars of our own time, which was not at least six times longer than she was wide; therefore it

* In the Monthly Magazine, vol. xiii., London, 1758, p. 445, there is a review of a work, entitled the memoirs of a Protestant condemned to the galleys of France, written by himself, which contains, in minute detail, a description of a French galley in which, in the year 1701, he was condemned to labour. The account was originally published at the Hague, and was afterwards translated into English, 2 vols. 12mo.

may be safe to assume that the French galley of one hundred and fifty feet in length, did not much exceed thirty feet in width. In other respects, with the exception of the length of oars, the description of this single-banked galley is evidently quite reliable.

The author says that she "consists but of one deck, which covers the hold; this hold is in the middle nine feet, but at the sides of the galley only six feet high. By this we may see that the deck rises about a foot in the middle, and slopes towards the edges to let the water more easily run off; for when a galley is loaded, it seems to swim under water, at least the sea constantly washes the deck. The sea would then necessarily enter the hold by the apertures where the masts are placed, were it not prevented by what is called the *coursier*. This is a long case of boards fixed on the middle or highest part of the deck, and running from one end of the galley to the other. There is also an hatchway into the hold as high as the *coursier*. From this superficial description, perhaps, it may be imagined that the slaves and the rest of the crew have their feet always in the water; but the case is otherwise, to each bench there is a board raised a foot from the deck, which serves as a footstool to the rowers, under which the water passes. For the soldiers and marines there is, running on each side along the gunwale of the vessel, what is called a *bande*, which is a bench about the same height with the *coursier* and two feet broad. They never lie here, but each leans on his own particular bundle of clothes in a very incommodious posture. The officers themselves are not better accommodated, for the chambers in the hold are designed only to hold the provisions and naval stores of the galley."

The author then proceeds to state that the French galley had a chamber in the poop or raised deck, only large enough to hold the captain's bed; that, contiguous to it, were compartments for the more valuable stores; and, after remarking on various details, he adds, that she had twenty-five benches for the rowers on each side of the vessel. These fifty benches, which were four feet apart, and ten feet long, are described as having been "covered with sackcloth, stuffed with flocks, and over this is thrown a cowhide, which, reaching down to the *banquet* or footstool, gives them the resemblance of large trunks. To these the slaves are chained, six to a bench, along the *bande*, runs a large rim of timber, about a foot thick, which forms the gunwale of the galley. On this, which is called the apostic, the oars are worked. These are fifty feet long, and are poised in equilibrium upon the afore-mentioned piece of timber, so that the fifteen feet of oar which come inboard are equal in weight to the thirty-seven feet outboard, and, as it would be impossible to hold them in the hand, because of their thickness, they have handles by which they are managed by the slaves."

If the oars of this vessel, which in their leading features, no doubt, resemble those of the large single-banked galleys of the ancients and of the middle ages, were fifty feet in length, then a beam of thirty feet would not suffice for oars of that enormous length. But if the beam was only one-sixth of her length, we may assume that the oars were not more than thirty-nine feet long, especially as that length would be amply sufficient for propelling a single-banked vessel. In that case the oar would be thirteen feet inboard as described, affording abundance of space for six slaves to be stationed at it, although the two nearest the side would be of comparatively less service in rowing. To enable the rowers, and especially those who were stationed nearest the centre of the galley, to work with effect, their benches must have been placed in a slightly oblique position.

From this description there is no difficulty in understanding the character of the uniremes; it is only when we come to inquire what was meant by biremes, triremes, and so forth, and how they were propelled, that the most conflicting statements are met with. Although Scheffer, General Melvill, and others, have bestowed an immense deal of learning in their endeavours to prove that each oar was rowed by one man only, and that the banks were placed directly one over the other, the bulk of the testimony of ancient writers, confirmed by experience, is opposed to any such views. Nor does the order of the Emperor Leo, which they quote, that "every ship of war must be of its due length, having two banks of oars, the *one higher* the other *lower*," favour their opinion. Indeed, "one higher the other lower" is more likely to refer to oar-ports placed in an oblique rather than a vertical line.

But, apart altogether from these conjectures, the most casual inquiry will show, that it would be impracticable to row any galley with more than two banks of oars on the plan suggested. For instance, if only two feet be allowed for the space between the lowest port and the water, and not more than five feet intervenes between it and the *scalum* of the second bank of oars, the rowers on that bank would be seven feet above the water line. Admitting that a bireme could be conveniently rowed by oars of sufficient length at this height, it would be impossible to do so at twelve feet above the water line, where the third bank of rowers would be seated. But a space of five feet between the lower banks, making no allowance for the thickness of the deck and beams, would fall far short of what would be required for the men who worked the upper banks, the angle of their oars increasing with the ascent, and, consequently, requiring much greater height between decks for their motion. Every additional rank adds to the difficulty in a greatly increased ratio; and, if hexiremes were efficient ships, which, on the authority of Polybius,

they were,* it would have been altogether impracticable to propel them by oars on the plan suggested.

GENERAL MELVILL'S THEORY.

It might be unnecessary to offer any further remarks upon the impracticability of this theory, had not Mr. Mitford, the celebrated historian of Greece, expressed so strong an opinion in favour of it. "The most satisfactory conjectures," he remarks, "that I have met with by far, are those of General Melvill."† It may, however, be here explained that General Melvill, in common with other writers on the subject, had previously entertained the opinion that the number of banks were measured by the number of men to an oar. That is to say, a unireme, he considered, had only one man placed at an oar, a bireme two, a trireme three, and so forth, up to the great ship of Ptolemy Philopater, which had, according to this theory, forty men to each of its fifty-seven feet oars. As the General, on examination, found such a theory to be untenable, he conceived the idea that in no case was there more than one man to an oar. "He," then, "set himself to investigate the subject for confirmation of this opinion on fact, as he should find that fact to turn out in the descriptions of sea-fights and other naval transactions, as given by the ancient authors, particularly Polybius, Caesar, Livy and Florus." Impressed with his new idea, it occurred to him, that "the indispensable requisites were, that in the arrangement of the rowers within, each side ought to have been such as to admit of the greatest number possible, that they should be so placed as not to impede each other; that they should be enabled to row to the best advantage; and that the highest tiers, both in respect to length and weight, should be sufficiently manageable; from these grounds the discovery immediately resulted to him, which was, that by a combination of two obliquities between the galley and a rowers' gallery running along its waist part, projecting outwards from a small distance above the water's edge, with an angle of 45°, and rows of horizontal seats of about two feet in length, fixed obliquely upwards from the bottom of the galley, against this obliquely projecting part of the side, with no more space betwixt them in all directions than should be found necessary for the free movement of men when rowing together, a quincunx or chequer order would be formed, with all the above-mentioned requisites, to the highest degree of advantage which could co-exist consistent with each other.

* Book 1, cap. xxiii.

† History of Greece, vol. ii., p. 184.

† Pownall's "Treatise on the Study of Antiquities," Appendix, No. iii., pp. 236-240.

It is not easy to understand the General's scheme by this description of it. He lays down, practically enough, some essential points, which require to be considered; but while the oar, adapted for the lowest banks might be "sufficiently manageable," the oars of the upper banks, even if well balanced, could not be effectively worked by one man. Nor is it easy to understand what is meant by "rows of horizontal seats, of about two feet in length, fixed obliquely upwards from the bottom of this galley;" however, the General caused a model of a quinquereme to be erected against a high wall belonging to his house in London, which was of the same proportions as would have been required for a "fifth part of a real galley." The model is said to have held, in a very small space, but with sufficient ease, the rowers of five tiers, of six men in each, lengthways, making one-fifth the rowers on each side of a quinquereme according to Polybius, who mentions three hundred as the whole number of rowers in it, besides one hundred and twenty fighting men. But this further explanation does not assist in the elucidation of his theory of "one man to each oar." On the contrary, it rather tends to confuse, unless the General means that there were one hundred and fifty row-ports on each side of the quinquereme mentioned by Polybius, which would be absurd.

But the practicability of the whole plan is shown when an examination is made of the space that would be required to place, single file, three hundred rowers at the oars of a quinquereme.

The sweep of an oar is measured by its length, and would require a certain defined space for its movement, irrespective of the number of men at work upon it. The single-banked French galley already described, was one hundred and fifty feet long, having twenty-five benches on each side, requiring a length of one hundred feet. All other accounts, as well as experience, show that the benches were, and required to be, three feet apart; and, allowing one foot for the breadth of the bench, each oar would require a space of four feet in a horizontal line. According to the General's theory, there would be thirty oar-ports on each bank, which, allowing for their obliquity, would require the gallery attached to the side of his galley to be somewhere about two hundred feet in length for the accommodation of the rowers. No doubt such a vessel could be built, but it is very questionable if any such vessel ever *was* built. Ptolemy Philopater's ship would have required to have had two thousand oar-ports on each side, to afford employment to her rowers. There is, however, an equally valid objection to the General's scheme: a bank of oars means something whereby one class of galleys could be clearly distinguished from another class. Ships of war in the comparatively recent period, were rated as mounting so many guns, just as ancient galleys were rated by their bank of oars; the one measured the fighting,

the other the propelling power. But if, according to the General's plan, triremes or quinqueremes were known by the number of banks, what was the measure of vessels of a larger size? for he does not profess to work any galley on his plan with more than five tiers; nor can he maintain that the size of his galley was measured by the number of her oars, if which would depend upon her length. In whatever way this scheme is examined, it will be found to be untenable.

Charnock, in his "History of Marine Architecture,"* has devoted, evidently more space than thought to the elucidation of this intricate subject. He says; "After reading the various treatises written with a view of elucidating this subject—after viewing the different designs collected with much care from the Roman antiquities for the same purpose, though they afford us in themselves nothing decidedly satisfactory—we may boast of having, in some measure, developed from them, if not the absolute truth, at least a reasonable system of explanation." "This," he continues, "has been a matter of not small difficulty; these learned dissertations and investigations, compiled chiefly from the labours and evidence of ancient sculptors, who attended neither to exactness nor proportions, are extremely contradictory, and it is very evident that, for the most part, they convey to us a very false idea of the galleys of ancient times." Charnock, however, does not seem to have solved the difficulty. While he, with all other writers on the subject, accurately describes "uniremes" as "those galleys or vessels which had only one row of oars extending between their masts, or perhaps the entire length of the vessel," he breaks down at the first step beyond an unireme when he says that "the biremes had one tier of oars between their masts, and another abaft the main, or principal mast." Indeed, all theories must necessarily fall, which cannot be made applicable to vessels of every description; and it is no solution of the difficulty to deny, as Mr. Charnock and others have done, the existence of vessels beyond a certain size, when it is found that a theory practicable within certain limits, would be altogether impracticable if carried beyond them.

That this would be the case in Mr. Charnock's plan he himself admits. He says that a trireme was a galley more formidable than the bireme, "having one tier of oars extending between the masts, a second abaft the mainmast, and a third forward, near the prow, or stem before the foremast." The quadriremes, he describes as having had "their oars ranged like the triremes, with the difference of having two tiers of oars, one above the other, abaft the mainmast." The quinqueremes, he adds, "were also of the same description, with the addition of the second tier of oars forward." He then goes on to state that "the octoremes

had two tiers of oars in the midships, and *three* at the stem and stern, making in all eight." This is no doubt an easy method of solving the difficulty, so far as regards biremes, triremes, quadriremes and octoemes, but our author fails to explain how his principle can be applied to vessels of a larger description, or even how the number of rowers each of these classes are said to have contained, was placed at the oars. The latter he does not attempt, and as summarily dismisses the former by questioning the existence altogether of any vessels with more than three tiers of oars placed either directly or obliquely above each other. He does so on the ground "that while from the evidence of a multitude of ancient sculptures," the fact is established of the existence of vessels with three tiers, "there is no certain proof of any having been constructed with a greater number;" adding that even vessels of the octoeme class "were enormous floating structures, built merely for the purposes of luxury and to gratify a ridiculous ostentation, so unfit for war, or even navigation, that they could not venture to sea without manifest danger."

Although Mr. Charnock is of opinion that "the foregoing explanation appears perfectly simple and conformable to reason, and enlarges our idea of the marine or naval force of the ancients," it certainly will not satisfy strict criticism. There is no reason to suppose that vessels of the octoeme class were very numerous at any period of history, but that these and others still larger, were constructed for purposes other than the gratification of "a ridiculous ostentation" there is ample evidence. However, the theory which Mr. Charnock considers unanswerable, would not be the most perfect in practice, even in vessels of an inferior class to the octoeme. The oars would be more effective in midships than at any other part of the vessel, yet our author places the greatest number of these aft and forward, *near* "the prow or stem, near the stern." If there is any merit in his scheme, it would consist in placing the *three* banks in midships, and one aft in the case of a quadrireme; one aft and one forward in the case of a quinquereme; and two instead of three near the "stem and stern."

The whole of the question of rowing ancient galleys has been exceedingly well put by Vossius, in his "Dissertation on the Ancient Marine."* Speaking of the largest of all these ships, of which any record remains, he says, "If we compare the oars that must necessarily have been used on board of this (Ptolemy's) ship, with those by which the modern galley is worked and allow for their different proportions in respect to length, we must also keep in view a similar comparison in regard to their size and thickness, and we shall then have a correct idea of their relative dimensions, as well as their strength." He then goes on to remark, "Let us now consider in what manner the four thousand rowers which

* Extracts from Charnock's "History of Marine Architecture," vol. i., p. 52.

are said to have been employed on board this vessel, were employed or stationed at the forty banks of oars. "It is not my intention," he continues, "to combat or examine what many learned men have already written on this subject, both in France and in other countries." Their opinion is certainly correct, in respect to the tiers of oars being placed obliquely over each other. Existing remnants of antiquity convince us clearly of the fact; but there still remains a much heavier difficulty to be got over: it is, in what manner the oars of the upper tier could be worked and managed by one person only; for it is denied that more than one was stationed to each oar, and the perplexity of the enigma is not a little increased, by the assertion that a very small part of the oar reached within board. It is well known that there are no weights whatever which, by the proper assistance and combination of mechanical power, may not be moved even by a single person; but we are at the same time certain, that the greater the weights are, so much the slower can they be moved. Oars, it must be remembered, become almost useless, unless they are impelled with quickness and spirit, as well as brought back to their original station, for a renewal of the stroke with equal celerity. The mechanical powers are of no use in this instance, as the law remains fixed and immutable, that any operation, which, in the ordinary course of things, requires ten men to perform it, and one only is employed, may indeed be executed by that one, but will require a period ten times as long to perform it in; for nature will not suffer herself to be deceived, or her laws perverted by any such vainly-hoped-for advantage."

While Vossius was of opinion that no vessel had ever more than seven tiers of oars—though he does not show how that number could have been worked—he, for the reasons just quoted, arrived at the conclusion "that in the lower tier one man only was stationed to an oar, which being short, and but trivially elevated above the surface of the water, he might be able to work without much difficulty." He then explains that, in his opinion, as to which there can be no question, "the oars in all superior tiers, as they increased in height from the water, increased also in length, within board as well as without, leaving room for a greater number of rowers to work, each in progressive proportion to their length;" but he draws a false conclusion from right premises when he remarks that the difficulty consists "not in so many tiers, but in the number of seats for rowers comprised in one oblique tier." Such are the views of a few of the leading writers on this intricate question. While agreeing with Vossius in the opinion that the oar-ports were placed obliquely in the sides of the vessel, and that the number of men to an oar was regulated by its length and position, there are numerous objections to his theory that the galleys of the ancients were classed either by the number of men or by the number of their seats;

Philopater, which had forty banks, nine feet being the highest point from the water for the *scalmi*, from which they could pull with effect.*

Mr. Howell, in confirmation, as he conceives, of this opinion, quotes Athenæus (book v., chap. 37); but though we cannot find anything in this ancient writer's description of the great ship, to lead to the conclusion that the *scalmi* of her highest bank of oars were not more than nine feet above the level of the water, we agree with Mr. Howell in the opinion that an oar could not be worked effectively at a greater height, and that the seats of the rowers were arranged by the system of obliquity, so as not to interfere with each other. We, however, differ from him in other respects. "A Greek trireme," he remarks, "at the time of the invasion of Xerxes, had from one hundred and fifty to one hundred and sixty rowers and forty armed foot, while the average-sized Persian triremes carried two hundred rowers and thirty soldiers." Presuming these to be established facts, Mr. Howell endeavours to make his theory harmonize with them. "I have shown," he says, referring to the French vessel, of which we have furnished particulars, "that a modern galley pulling fifty oars has six rowers on a bench. If I am correct," he continues, "a trireme pulled thirty oars, that is, three banks, five oars in each, thus:—

"Now, to a vessel of her bulk, with elevated poop and stern," he goes on to state, "less than five men cannot be allowed to each seat. Thus there are twenty-five rowers in each bank, and six times twenty-five make one hundred and fifty." But though this mode of calculation—which, by the way, does not allow for any "watch-and-watch" or reliefs †—makes the Grecian galley agree with his scheme of manning

* Howell, Pamphlet, p. 48.

† Although Homer—Book 13th—states that Ulysses was rowed from Corcyra (Corfu) to Ithaca, a distance of eighty nautical miles, in ten hours, there is nothing to show that ancient galleys were propelled *continuously* by their oars, or for a longer period on a stretch than the one set of rowers could endure. To this day the Malay pirates sometimes row more than ten hours without change, and are fed at their oars. Nor is there anything to show that the ancient galleys carried two, much less three gangs of rowers, although they no doubt had spare men for reliefs, in case of accident. But this question, though interesting, does not affect the solution of the problem now under consideration.

her, so far as regards the number of rowers, it is based upon the presumption that the same number of men were placed on each of the oars. This is evidently a fallacy. While five men might be placed to advantage on each of the upper tier of oars, two of them, at least, would be useless on the lower tier in a vessel of this size, even if they could find space to work at it. The same fallacy runs throughout the whole of his argument when he endeavours to bring his views in these matters into harmony with the imperfect and frequently conflicting descriptions of ancient authors. Thus he accounts for the Persian trireme with her two hundred men, by saying that she "must have had six men to an oar, which is not improbable, the Asiatics being not so athletic as the Greeks. Six times thirty," he adds, "is one hundred and eighty, leaving twenty men for casuaktias, etc. etc."

This is an exceedingly easy mode of attempting to solve an intricate question; but Mr. Howell, instead of overcoming the difficulty, only increases it when he says that there must have been six men to an oar, for six men would be less easily placed at each of the lower tiers of oars than five. Nor does he aid in the solution of this vexed problem when he comes to deal with vessels of five banks. Practically his arguments are the same, [but it will be interesting and instructive to quote them, as showing the mistakes which learned men are liable to make when dealing with questions which can only be solved by combining learning with experience, and how complacently they arrive at the conclusion that they must be right and everybody else wrong when their figures are made to correspond with certain figures quoted by ancient authors. "Polybius," remarks Mr. Howell, "informs us the crew of a quinquereme was three hundred rowers and one hundred and twenty fighting men. Now a quinquereme," he reasons, "having five banks, thus,—pulled

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fifty oars, or twenty-five aside, the same number as the modern galley. As by this arrangement, adding to the banks of the galley," he continues, "did not add to her height, and not in any great degree to her length, seven feet being sufficient for a bank, I think the addition of one man to an oar was all she could require. Six times five is thirty, and ten times thirty, three hundred. Both of these," he concludes, with evident self-satisfaction, "are remarkable coincidences; and tally better with

the description of ancient authors than any solution that has yet been given." "I shall now," he continues, "show how remarkably it agrees with Athenæus; thus taking in the whole range and applying to all, a thing it could never do were it not near the truth." The tesseracontes having," he adds, "forty banks, five bars to a bench, makes her have two hundred oars of a side, or four hundred in all. Considering her size, she could not have less than ten men to an oar." The Liburnia of Caligula, according to the testimony of Suetonius, had, he states, that number of men to an oar, forgetting that she was a single-banked galley, and consequently he comes to the conclusion that that number was attached to each of the four hundred oars in Philopater's ship, which "gives four thousand, the number mentioned by Athenæus." Here again he overlooks the greatly increased difficulty or impracticability of placing ten men at each of the lower tier of oars.

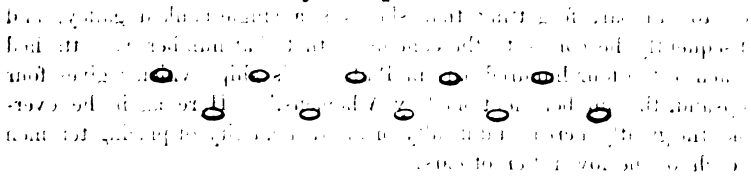
Now, while there can be no doubt that all vessels had their ports placed obliquely in cases where there were more than one tier of oars; that they were vessels of five tiers of oars thus placed and no more, and that the Grecian trireme had one hundred and fifty rowers, and the Persian two hundred, it is clear from the descriptions of ancient authors, that there were many triremes of much smaller dimensions, especially from the facility with which they were hauled upon the beach: while there were, no doubt, others carrying even more men than the galleys he refers to.* But presuming Mr. Howell to be correct in his supposition, that a trireme derived her name from having three rows of five tiers and no more, as he illustrates, then a bireme would derive her name because she had only two rows of five tiers, thus:—

No practical man, however, could entertain the idea that ten oars arranged as he suggests would be equally efficient to a similar number in single lines or even in double tiers; nor would a galley of this size be nearly so efficient as she would be with her ports in a horizontal line,

* Thucydides (Bloomfield), vol. i. cap. xciv. p. 514, etc., etc.; and vol. i. pp. 30 and 32.

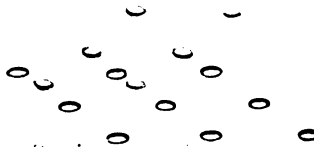
for she would be much too high in proportion to her length. Similar remarks apply with nearly equal force in the case of triremes.

The perusal of ancient authors, as well as experience, leads to the conviction, that galleys from the unireme to the quinquereme inclusive, had their oars arranged, not merely in oblique vertical rows, but also in horizontal rows, according to circumstances. Besides, the plan illustrated on the Nineveh marble is much more practicable than the one suggested by the theory of Mr. Howell. A galley with only ten oars on a side would be more efficient if they were placed as follows:—



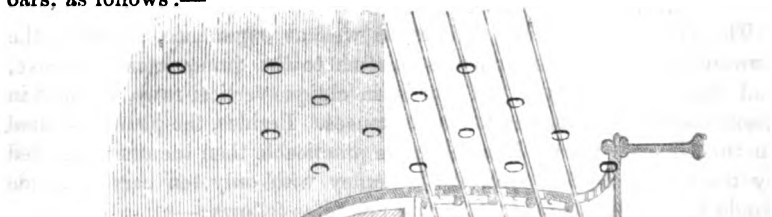
than if arranged in the manner suggested by Mr. Howell. Nor would they occupy more space, the saving of which, no doubt, induced the ancients to increase the number of tiers. It is only, however, when three banks and upwards are applied, that there is any very material saving of space. Thirty oars, for instance, placed obliquely in three rows in midships, would occupy much less space, and would consequently give greater accommodation for troops or stores, than would be the case if the same number of oars were placed in a single horizontal row.

As the galleys of the ancients must have varied very much in their capacity and dimensions, it would be more reasonable to suppose that, from the unireme to the quinquereme inclusive, they derived their names from the number of oars placed horizontally over each other, rather than from the number of oblique rows as suggested by Mr. Howell. That is to say, though a trireme bore that name because she had three tiers of oars placed thus,



she was, nevertheless, still a trireme, though she had four, five, ten or twenty oblique rows of oar-ports, only she would be a trireme of a larger size, just as we have or had frigates—single-decked vessels, which have varied in size from 600 to 6000 tons. A trireme might therefore be a much more powerful vessel than a quadrireme or quinquereme. On

a similar principle, a quadrireme would have four horizontal tiers of oars, as follows:—



but, as in the case of the trireme, she would still be a quadrireme, only of a larger size, if she had more than four oblique rows. There is, however, a limit beyond which oars could not be worked when placed over each other in any fashion. That limit would be reached at the fifth horizontal row, and for the reasons already named, a sixth row, however obliquely placed—for obliquity has also its limits—would be useless. Therefore, while a quinquereme had five horizontal rows, and the same number of oblique rows formed a *quincona*, thus:—

the galley, it would appear, acquired another name when she had more than five of these oblique rows. For instance, vessels with six oblique rows were, in our opinion, called hexiremes; with seven rows, septiremes; with eight rows, octoremes, and so forth: up to Ptolemy Philopater's tesseraconteres. That the number of men placed on board the ships of the ancients was regulated as at present by the work they had to perform, and by the size of the ship, there can be no doubt; but the number of men had nothing in itself to do with the class or grade of the galley. In some triremes there may have been frequently not more than fifty rowers, and in others five hundred. Our theory does not require the number of men to harmonize with the number recorded by Polybius, Athenæus, and other authors, to have been employed in the different rated galleys of the ancients. In the trireme, which is described as having thirty oars and one hundred and fifty rowers, it would not be necessary to place five men at each oar, as Mr. Howell has done, to make his theory harmonize with this account. Six men to each of the oars of

the highest bank, five to each oar of the second, and four men to each oar of the third bank) would give the requisite number of one hundred and fifty rowers, who would be far more effective than if placed in the manner he describes. In the case of the quinquereme, which, according to Polybius, had three hundred rowers, instead of placing six men, presuming there were no reliefs, to each of her fifty oars, our theory, while it equally solves the difficulty created by the statement of Polybius—a difficulty which could arise in quinqueremes with so large a crew as three hundred rowers,—is one which could be carried out with much more practical effect; for, by placing on the 1st bank $8 \text{ men} \times 5 = 40$; 2nd, $7 \times 5 = 35$; 3rd, $6 \times 5 = 30$; 4th, $5 \times 5 = 25$; 5th, $4 \times 5 = 20$; there would be 150 on each side, or 300 rowers in all, as represented in the transverse midship section of what a quinquereme really must have been. (Fig. 2.)

(To be Continued.)			
71,509	179,222	...	...
90,000	971,110	...	...
91,700	218,317	...	...
92,651.1	717,800.1	...	...
93,219.081	910,101.000	...	...
94,770.1	982,100.1	...	...

BEFORE AND AFTER.—WHAT WE WERE AND WHAT WE

ARE.			
...
...
...
...

The following statement shows the position of British Commerce, Navigation and Finance, before and since the Adoption of Free Trade and the Repeal of the Navigation Laws:

The real value of British imports can only be ascertained since the year 1854. In that year they amounted to £152,389,053, whilst they had increased in 1865 to £271,072,285, and in 1870 to £303,257,493.

The real values of the exports from the United Kingdom in the years

Year	Value
1854	152,389,053
1865	271,072,285
1870	303,257,493

The real values of these exports cannot be given previously to 1854, as such values of Foreign and Colonial merchandise were not ascertained until that year.

The real value of exports of British and Irish manufactures during the years 1842, 1858, 1865, and 1870 respectively, was

the value of the same in the year 1842, 1853, 1865, and 1870, was as follows:—

1842	47,224,988
1853	98,993,781
1865	165,835,725
1870	199,586,822

In the years 1854, 1865, and 1870 the real values of our exports of Foreign and Colonial merchandise were—

1854	18,636,366
1865	52,995,851
1870	44,498,755

The quantities of the various principal articles of food below mentioned, and now admitted duty free, were as follows for the respective periods:—

	1842.	1853.	1865.	1870.
Cattle No.	Prohibited.	125,253	283,271	202,172
Sheep "		259,420	914,170	669,905
Bacon and Hams Cwts.	8,355	205,667	713,846	567,164
Butter "	175,197	403,289	1,083,717	1,159,210
Eggs No.	89,548,747	123,450,678	364,013,040	430,842,240
Rice Cwts.	511,414	1,504,629	1,941,580	4,077,468

The quantities retained for consumption of the following articles, were

	1842.	1853.	1865.	1870.
Cocoa Lbs.	2,246,569	3,997,198	3,826,425	6,153,981
Coffee "	28,519,646	36,983,122	30,505,972	30,230,572
Sugar, raw Cwt.	3,868,437	7,272,833	9,878,933	11,542,937
Tea Lbs.	137,355,911	58,834,087	97,834,600	117,551,152
Tobacco, manufactured Cwts.	122,018,140	49,848,898	33,076,842	40,831,898
Wine Galls.	4,815,222	6,813,830	11,993,760	15,079,854

The declared or real values of the more important articles of British manufacture exported during the same years are as follows:—

	1842.	1853.	1865.	1870.
Apparel, hardware and millinery	1,143,270	6,923,199	17,558,706	7,018,278
Cotton yarn	7,771,464	6,895,653	10,351,049	14,671,135
goods	13,907,884	25,817,249	46,903,796	56,745,210
Earthenware & porcelain	555,430	1,338,370	1,442,384	1,693,349
Hardware and cutlery	1,398,487	3,665,051	4,334,973	4,468,851
Leather and leather wares	400,927	1,578,595	2,462,100	2,625,663
Linen yarns	1,025,551	1,154,977	2,505,497	2,237,492
Manufactures	2,346,742	4,758,432	9,155,958	7,374,764
Machinery	554,653	1,985,536	5,213,530	3,710,685
Iron and steel	2,457,747	10,847,422	13,451,443	21,074,635
Tin plates	363,685	1,181,069	1,482,766	2,302,872
Silk threads & manufactures	580,189	3,044,361	2,177,285	2,604,761
Woolen yarn	687,305	1,456,786	5,423,047	5,182,936
.. manufactures	5,185,045	16,172,182	26,102,259	31,080,670

The tonnage of British and Foreign vessels which entered and cleared in the United Kingdom with cargoes in the years 1842, 1853, 1865, and 1870 respectively was—

	1842.	1853.	1865.	1870.
British ...	5,415,821	9,064,705	17,413,643	22,243,039
Foreign ...	1,930,983	6,316,456	7,572,202	9,381,641
Total ...	7,346,804	15,381,161	24,985,845	31,624,680

The coasting tonnage of the United Kingdom has likewise increased greatly, notwithstanding the severe competition of the Inland Railway Carrying Trade, as is shown by the accompanying figures of the tonnage of British and Foreign vessels engaged with cargoes in the coasting trade of the United Kingdom:—

	1842.	1853.	1865.	1870.
British ...	10,785,460	12,820,745	18,150,649	18,210,519
Foreign ...	None	None	77,705	89,756
Total ...	10,785,460	12,820,745	18,228,354	18,300,275

The tonnage of vessels built and registered in the United Kingdom in the years 1842, 1853, 1865, and 1870 was—

	1842.	1853.	1865.	1870.
Sailing-vessels ...	118,213	154,956	235,555	136,286
Steam-vessels ...	13,716	48,215	179,649	226,591
Total ...	132,929	203,171	415,204	362,877

The following amount of foreign tonnage was registered in the United Kingdom:

	1842.	1853.	1864.	1870.
Tons. None	80,078	128,761	12,185	

The total registered tonnage of the United Kingdom was in the years—

	Tons.
1842 ...	2,990,849
1853* ...	4,080,204
1864* ...	5,627,500
1865* ...	5,760,809
1870* ...	5,699,789

* The figures for these years include the registered tonnage of the Channel Islands and the Isle of Man.

The superior power of steam vessels being so largely superior to that of sailing vessels, leads to considerable importance to the following figures of the steam tonnage on the register for the United Kingdom in the years 1851, 1865, and 1870 respectively:—

Year	Tons
1851	186,687
1865	823,533
1870	1,112,934

The gross Customs revenue, after deducting drawbacks, &c., amounted in the following years to—

Year	Revenue
1842	22,528,718
1853	22,515,918
1865-66	21,802,289
1870	21,449,843

The total gross receipts of revenue of the United Kingdom during the following years were—

Year	Revenue
1842	52,708,147
1853	57,535,215
1865-66	67,812,292
1870	75,484,252

The expenditure of Great Britain, which amounted in 1842 to £55,229,874, was in 1853 £55,769,252, in 1865-66 £66,914,357, and in 1870 £66,864,752.

The amounts of the unredeemed funded and of the unfunded debt were respectively—

Year	Funded Debt	Unfunded Debt
In 1842	778,068,840	18,182,300
In 1853	791,250,440	18,182,300
In 1865-66	761,622,704	17,742,500
In 1870	779,665,204	17,742,500

The figures for the years include the registered tonnage of the Channel Total ...

In 1868—
 Funded ... 777,489,224
 Unfunded ... 18,186,000

Total ... 795,675,224

In 1865—
 Funded ... 775,768,205
 Unfunded ... 10,742,500

Total ... 786,510,705

In 1866—
 Funded ... 778,819,290
 Unfunded ... 6,162,700

Total ... 784,981,990

In 1870—
 Funded ... 740,786,548
 Unfunded ... 6,791,500

Total ... 747,578,048

The figures we give are worth serious consideration. They show how enormous was the increase in our trade and manufactures from the moment that we had, as a nation, acquired sufficient common sense to remove restrictions, and so-called "protection."

If anything will satisfy those nations who are still halting on the threshold that trade to be prosperous must be "unprotected," we think our figures will do it. What, for instance, will our American cousins say to the fact that the real value of our exports and imports has been doubled since 1854, and that the real value of British and Irish manufactures exported has more than quadrupled since 1842, and to the further fact, that the registered tonnage of our mercantile marine has doubled. Our home readers who are interested specially in manufactures may find something in the fact that "iron and steel" exports have increased from two millions to twenty one millions of pounds in value; and that some other of our manufactures have increased in value in a proportion almost as great.

Our timid people at home, who fear we are overbuilding ships, will gather some grains of comfort from our figures, for they will see that, although the tonnage of our steam fleet has increased by nearly one million of tons since 1851, the whole tonnage of the United Kingdom

was less in 1870 than it was in 1865. They need not, after seeing these figures, have very great fears that down to the end of 1870 we were building too many steam ships.

Again, with all our reduction of duties, we find that the gross receipts of Revenue in 1870 were not less than 80 per cent. above the gross receipts for 1842; and, as regards our debts, we find that the funded and unfunded debt has, in the same time, been reduced by over forty-three millions sterling.

That the British shipowner and merchant have been ruined by legislative action is, we think, scarcely to be affirmed after this. On the contrary, we think that these interests have every reason to be satisfied with the results.

It is proper to wind up a notice like the present with a note of warning, and this we accordingly proceed to do. It is as follows:

Great Britain may think a little too much of her present prosperity, and may in consequence, some day find, just for want of a few thousands of pounds judiciously laid out in training her merchant seamen, that her ships of war cannot be manned in case of emergency. We speak advisedly when we further say that this must of a certainty happen, unless some serious and earnest attempt is made by the Board of Trade and Admiralty together to extend and improve our reserves.

The scheme recommended by the last Royal Commission, presided over by Mr. Cardwell, sketched out the best plan ever yet presented to the public, or recommended to Her Majesty's Government; and our present tiny Royal Naval Reserve—our only reserve of merchant seamen—is the result of an experiment founded on the smallest and most unimportant of the recommendations of the Commission; and attempted without reference to those recommendations as a whole.

Those of our readers who specially turn their attention to our means of defence will find material for reflection, and for strengthening their arguments in favor of the speedy establishment of efficient reserves of seamen and ships. They will be able to contemplate the state of utter helplessness to which we should, as a nation, be reduced, if our merchant ships at sea were interdicted with by an enemy's cruisers.

If our merchant ships could not reach our ports, from whence should we obtain substitutes for the annual six million pounds of cocoa, the thirty million pounds of coffee, the many millions of quarters of wheat, the hundred and seventeen million pounds of tea, the four million of rice, the four hundred and thirty millions of eggs, and last, and most important, the eight hundred thousand head of sheep and other stock we require for annual consumption, and which are now brought to us from beyond the seas.

Count Riol's Repentance—A Rhineland Legend.

By PERCY HAMILTON.

I.

“SHRIVE me! no! thou doating greybeard!
 “Shrive me! no! a thousand times!
 “What care I for absoltion,
 “I, who glory in my crimes?
 “Dost thou know that I am Riol,
 “Riol of the bloody hand—
 “And that murder, rape, and rapine
 “Track my footsteps through the land?”

II.

“Well I know thy name, Count Riol;
 “Well thy deeds are known to me;
 “But though few have been such sinners,
 “I will shrive thee—even thee!
 “Penance do, and shew repentance
 “For the past—thou shalt be shriven,
 “And shalt surely leave my presence
 “All forgotten—all forgiven.”

III.

“Curse repentance!” jeered Count Riol,
 “If the penance were but light,
 “’Twould be sport to cheat the Devil—
 “Cheat the Devil of his right.”
 “See, Sir Count,” the Hermit answered,
 “Nothing simpler could I ask.
 “Fill this empty gourd with water—
 “Swearing to complete the task.”

IV.

On his knightly word he promised,
 He'd fill him to the Hermit's well
 Stoop'd to fill the gourd with water.
 As he stoop'd the water fell,
 With his scarf he lower'd his helmet,
 But the water fled the boss ;
 Leaving not one drop of moisture
 Twinkling on the crevice moss.

V. I

In the distance gush'd a fountain
 Sparkling in the noonday sun.
 But when Riol reach'd the margin,
 Suddenly it ceased to run ;
 And the waters seemed to mock him,
 Mock him with a tinkling laugh,
 As they vanished o'er the meadows,
 Trailing like a lady's scarf.

VI. II

Riol cursing climb'd a mountain
 After him his horse he led,
 Thence he spied a distant river
 Dwindled to a silver thread,
 Eve and night he madly galloped,
 Reach'd it at the break of day,
 But when he stoop'd for water,
 Still the water sped away.

VII. III

Onward yet Count Riol journeyed,
 Passing o'er many lands,
 Till at last he was out charged
 Dropt upon the hard sea sands,
 Riol leapt from off his saddle,
 Ran the whispering words he heard,
 But like frightened dogs they cowered,
 Turn'd and fled before his feet.

viii.

Then Count Riol vowing vengeance,
 Journey'd back o'er hill and dell,
 Till he reach'd the rugged mountain,
 Where was hung the Hermit's cell.
 There he found the old man praying—
 Praying on his bended knee,
 And he heard his own name, Riol,
 Muttered very tenderly.

ix.

"Keep thy prayers for those who ask them."
 And he smote him as he knelt.
 "Lord forgive him," pray'd the Hermit,
 Every blow that Riol dealt;
 Nor did Riol cease from smiting
 Till the old man ceased to live,
 Praying with the last death rattle,
 "Lord forgive, as I forgive."

x.

For the first time Riol shuddered—
 Shuddered at the sight of gore,
 As he looked upon his victim.
 Stretched in death upon the floor,
 For the first time Riol's bosom
 Heaved with deep repentant sighs.
 For the first time tears of sorrow
 Shivered in his down-cast eyes.

xi.

On his knees he fell, and trembling
 Took the dead man's hand in his,
 Clos'd his eyes, and weeping sorely
 Press'd upon his brow a kiss:
 And the gourd hung from his girdle,
 Caught a tear before it fell,
 Brimmed and bubbled o'er with water,
 Which from blood-stains washed the cell.

XII

On the water flowed unceasing,
 Filled the well to brimming o'er,
 Set the dried-up fountain running,
 Fuller, clearer, than before.
 And the virtue of that tear-drop,
 Which Count Riol's soul anealed,
 Is not spent, for by those waters
 Now the body's ills are healed.

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SAILORS' HOMES AND SAILORS' BOARDING-MASTERS.

(By THE EDITOR.)

A PROPOSAL has been made that, with a view to securing proper lodgings for sailors, some prominence should be given to the keepers of respectable boarding houses, besides the assistance now given to officers of Sailors' Homes. We think that there is much to be said in favour of such a proposal. The tone, however, in which many persons have recently discussed the subject of Sailors' Homes, and have spoken of their directors, makes it very difficult for us to write on the subject, lest in anything we say it may appear that we endorse the unfair charges brought against those institutions and their directors, or that we in any way approve of the language that has been used, or of the spirit by which in some cases the opposition has been prompted. The *Nautical Magazine* has no ideas in common with the enemies of Sailors' Homes, and will always, whilst we conduct it, be ready to aid the directors in their laudable endeavours to elevate the seaman, and to protect him from touts and crimps.

A seaman ashore longs more than any other being for domestic comfort. He likes to see a comfortable fire and a jolly friend, to be in a snug small room, to have a kind and attentive host and buxom hostess, who can attend to his various whims and wants, and take him about to see the sights. This is reasonable enough, for whilst at sea he has often to put up with discomfort and privation to which the working class on land are strangers. When, therefore, sailors get on shore, they endeavour to go where they think they can get domestic comfort; and in their search for it they generally drop into the clutches of a class who get their

living by preying upon and plundering them. The Sailors' Home steps in and protects them from this ; but in reply to inquiries we have put to seamen, they often say that the barrack life, as they call it, the discipline, the moral precepts hung about the walls of the Homes—all in themselves good and proper—tire them. There is, of course, a good deal of unreasonable prejudice in all this, which will be overcome in time ; but the fact remains, that very many sailors do prefer a private lodging to a Sailors' Home ; and in this we have much sympathy with them. The majority of seamen's boarding-houses are at least questionable, many are decidedly bad ; but there are also many really good homes for sailors kept by honest men, who, as a matter of fact, act as protectors of seamen ; and it is said, and said with reason, that these respectable men and the Sailors' Homes might together lodge the greater part of our merchant seamen, if the Homes would but co-operate with them, and if some arrangements were made whereby the sailors could be helped to distinguish respectable boarding-houses from those that are questionable, or are known by the police to be improper. Most of the good boarding-masters are old seamen, and all of them know Jack's ways ; and if they could but once get ahead, they would, no doubt, help the Sailors' Homes to wage war with crimps.

At present, when a ship arrives in the Docks (what we are now saying does not apply to Liverpool, but applies specially to the port of London, and other ports similarly noted for an absence of order in these matters) the lowest class of boarding-masters—"hammock-snatchers," as they are called—manage to get access to the seamen. The officials of the Sailors' Home have leave to enter the docks to counteract this. Those sailors who prefer the Sailors' Home go off with the Sailors' Home officials ; those who prefer private boarding-houses have no other choice (if they are strangers) than the low boarding-masters, who have managed, by force or persuasion, or (it is no use to blink the fact) some other means, to get into the docks. The respectable boarding-masters cannot get into the docks, as they decline to do so by the improper means resorted to by the "hammock-snatching" class, and these respectable boarding-masters are not accorded the opportunities given to the officials of the Home. They have therefore no opportunity of getting at the seamen on arrival, and have to be content with such sailors as may be left after the Sailors' Home have secured their lodgers, and the keepers of improper houses and "hammock-snatchers" have had their hauls.

Those of our readers who make an occasional short trip to the seaside by steamer will have noticed and appreciated the advantages of ticket porters to remove their luggage. Let our readers think what would be

the confusion and robbery and harrassing if there were no ticket porters, but if any dirty low fellow were to be allowed to pounce down on luggage as soon as the steamer touched the stage, and yet this is so in the case of seamen who have returned, not from a trip to Margate, or the Isle of Man, or Dunoon, or Scarborough, but from a voyage half round the world.

To remedy the existing state of things it has often been proposed that the dock or local police authorities shall license ticket porters, and that the Board of Trade shall, under certain conditions, grant to respectable boarding-masters licenses as agents to supply seamen, which they have power to do under the 146th section of the Act.

Of many of the proposed conditions we are in doubt, and therefore refrain from mentioning them; but to the proposal to license respectable men in London to supply seamen, and at most of the ports, we think it will be difficult to object.

The persons licensed may hire, engage, supply, or provide seamen, to be entered on board merchant ships, subject to due attendance at the Mercantile Marine Office, and might for that purpose be permitted to enter any Mercantile Marine Office, and there is no reason why they should not, with the sanction of the dock authorities, also enter any of the dock premises, or any ships in the docks. The licensed agents would necessarily be subject to control by the licensing authorities, and would, for their own interest and protection, naturally co-operate with the Sailors' Home and dock authorities in keeping unlicensed persons out of the docks or ships; and further, with the sanction of the master, any one of the licensed agents (the Sailors' Home people being also licensed) might be allowed to board any homeward-bound vessel, and so effectually displace crimps and keepers of disreputable houses.

Licensed agents (including, of course, licensed Sailors' Home officials) might, with the consent of the superintendent, be present in the Mercantile Marine Office when any of the men lodging with him are being paid off.

It will, say the advocates of the scheme we have roughly indicated above, not be difficult to make a selection of good agents amongst the boarding-masters. For at some ports agents are now licensed by the Board of Trade to supply seamen, and have done well. This is a very strong point, as, judging from the absence of complaints against the agents already licensed, it is perhaps only fair to assume that no improper persons have as yet been licensed, and if this is so, there is certainly no reason why they should be licensed in future. But whatever is done, the Board of Trade must be guided in their licensing by the local police

authorities, for neither Mr. Chichester Fortescue nor the officers under him at the head of the Marine Department or at the Registry Office of Seamen, can be expected to visit boarding-houses to enquire and report.

One very great point in favour of the proposed scheme is that it would have the effect of inducing a greater number of respectable persons to become boarding-masters, and that the privileges which their license to supply seamen would confer, and the danger of losing it for misconduct, would be a sufficient inducement to keep them straight. There would, it is thought, be less desertion, as the boarding-masters could see their men safely on board. Owners and masters of ships often now arrange with unlicensed men to get their crews on board, and it is reasonable to believe that they would be able to arrange with the licensed agents to do so. In point of fact the advocates of the scheme say that the license would not in any way interfere with, but rather assist, the promoters of Sailors' Homes in their good intentions for Jack's welfare, and would alike confer benefits on the owner, master, sailor, and respectable boarding-master, to the great discomfort of the crimp and hammock-snatcher.

If this is so, we trust that something will be done speedily. One step in the right direction is a clause in Mr. Fortescue's Bill, which will, if passed, enable the local authorities to license ticket porters: and as regards the licenses to supply seamen, they can, as we have shown, be issued under the present Act; but we cannot help feeling that a grave responsibility will attach to any department which, by this or any system of licensing, and without proper means of obtaining trustworthy information, attempts to separate the sheep from the goats.

ROYAL SAILORS, ROYAL LORD HIGH ADMIRALS, ROYAL
FIRST LORDS OF THE ADMIRALTY.

BY LORD WILLIAM LENNOX.

In recording the deeds of those who, in the words of Chas. Dibdin,

“The splendour of courts have resign'd,
For the seaman's rude cot changed their cradles of down
And soft airs for the rude roaring wind.”—

we propose to lay before our readers a brief account of all who have held command in our navy, or have risen to the high honour of being at the head of the Admiralty. The Admiralty Office dates from 1513, when Henry VIII. appointed Commissioners to inspect his ships of war. In 1662 the Admiralty was first put into Commission, the great officers of

State being the Commissioners. During the Commonwealth, the Admiralty affairs were managed by a Committee of the Parliament; and at the Restoration, in the year 1660, James, Duke of York, became Lord High Admiral. In 1684, Charles II. held the Admiralty in his own hands until his death, when James II. made himself Lord High Admiral. In 1688-9 the Admiralty was a second time put into Commission, and the Board appears to have assembled at Admiral Herbert's lodgings in Channel Row, Westminster, he being at that time First Lord. The royal personages who have successfully held the post, were:—James, Duke of York, who was appointed to it June 6, 1660; Charles II., June 14, 1678; Prince Rupert, July 9, 1678; Charles II., 1684; James II., May 7, 1688; George, Prince of Denmark, May 28, 1702; William Henry; Duke of Clarence, May 2, 1827.

We will commence with Charles II., who, though not strictly in chronological order, must be first noticed, as being the first of the royal family of England who went afloat.

Charles, although twice at the head of the Admiralty, was more of a yachtsman than a seaman, and evidently preferred the gilded saloons of Whitehall and Hampton Court, with now and then a visit to Tunbridge Wells or Newmarket, to the monotony of the quarter-deck. We, however, find that in 1648 it was arranged that Charles, then Prince of Wales, should put himself at the head of the Scotch as soon as they entered England. He was accordingly preparing himself for that destination, when that portion of the fleet lying in the Downs, consisting of seventeen ships and frigates, declared in favour of the King. The crews, having put their officers on shore, and chosen new commanders from among themselves, sailed for Holland, where the Duke of York then was. On their arrival, they sent to inform the Duke of what had happened. He immediately went to them, and remained on board till his brother came by sea from France, and himself took the command of the squadron, which in a few days returned to England, leaving the Duke at the Hague with his sister, the Princess of Orange. The Prince of Wales, accompanied by Prince Rupert, the Lords Willoughby of Parham, Colepeper, and Hopton, sailed to Yarmouth, and thence to the Downs, proceeding into the Thames in order to encourage the King's party in the City, and to make the people clamorous for a peace. Here he took some prizes of considerable value, for which he apologized in a letter to the Lord Mayor and Aldermen; and soon afterwards published "a declaration to all his Majesty's loving subjects concerning the grounds and ends of his present engagement upon the fleet in the Downs." The fleet of Prince Charles, except the prizes taken by it, hurt its adversaries but little. Faction, so fatal to weak bodies, entered into it and rendered it insignificant; for it left the Downs on the approach of the enemy, and sailed to Holland,

where it no longer was an object of terror. The Prince, having been severely reprimanded by the House of Peers for encouraging the Scotch invasion, the English insurrections, and the naval reports, shortly afterwards left the squadron, and retired to the Hague. We shall have again to refer to Charles, and the part he took in the naval affairs of this country when King; and shall now proceed to notice the claims he has as a royal yachtsman. Of course we need not remind our readers that the yachts of the reign of Queen Victoria are as different to those of the "Merry Monarch" as Nelson's ship, the *Victory*, was to the *Great Harry*, built by order of Henry VIII., or as the *Arrow* yacht is to a Dutch galliot. If we remember right, King Charles had a yacht which he called the *Fubbs*, after one of his numerous, though rather *embonpoint*, favourites.

Pepys, who was Secretary to the Admiralty in the reigns of Charles II. and James II., thus writes:—"Mr. Grant showed me letters of Sir William Petty's, wherein he says, that his vessel which he hath built upon two keeles (a model whereof, built for the King, he showed me) hath this month won a wager of £50, in sailing between Dublin and Holyhead with the packet boat, the best ship or vessel the King hath there; and he offers to lay with any vessel in the world. It is about thirty tons in burden, and carries thirty men, with good accommodation (as much more as any ship of her burden), and so any vessels of this figure shall carry more men, with better accommodation by half, than any other ship. This carries also ten guns, of about five tons weight. In their coming back from Holyhead, they started together, and this vessel came to Dublin by five at night, and the packet boat not before eight the next morning; and when they came they did believe that this vessel had been drowned, or at least behind, not thinking that she could have lived in that sea." Strange things are told of this vessel, and he concludes his letter thus—"I only affirm that the perfection of sailing lies in my principle: find it out who can." What measurements were used in 1668 we know not, but from the number of men and guns we should put down Petty's crack ship at, at least, three hundred tons.

We now turn to James, Duke of York, and Prince Rupert, a naturalized Englishman. When, on February 22nd, 1665, Charles the Second declared war against Holland, his fleet, consisting of 114 sail, besides freshships and ketches, was commanded by the Duke of York, and under him by Prince Rupert; and was manned by about 22,000 men. Opdam, the Admiral of the Dutch navy, with a nearly equal force, gave battle to the English on the 3rd of June. When in the heat of action, and engaged in close fight with the Duke of York, Opdam's ship blew up. This untoward event much discouraged the Dutch, who fled towards their own coast. Tromp alone, son of the celebrated Admiral, bravely sustained, with his squadron, the efforts of the English, and protected the rear of his

countrymen. The vanquished had nineteen ships sunk and taken ; the victors lost only one. During the action, the Duke was conspicuous for his bravery ; he was long in the thickest of the fire. The Earl of Falmouth, Lord Muskerry, and Mr. Boyle were killed by one shot by his side.

In the month of August of the same year the command of the navy devolved upon Sandwich, the Duke having gone ashore when our maritime power was considerably weakened, and a severe check given to the advantages we had obtained over the Dutch by the disastrous affair at Bergen, where from the King of Denmark's delay in sending orders to the Governor, or from his avidity to endeavour to get the lion's share of the booty which he and Charles had secretly agreed to share between them, the English Admiral, though he behaved with great bravery, failed of his purpose. After France had declared war in 1666, England was evidently overmatched in force, yet she possessed this advantage, that she lay between the fleets of her enemies, and might be able, by well-concerted and immediate operations, to prevent their junction, but owing to the want of energy this circumstance turned rather to her prejudice. Louis had given orders to the Duke of Beaufort, his Admiral, to sail from Toulon, and the French squadron, under his command, consisting of above forty sail, was now commonly supposed to be entering the channel. The Dutch fleet, to the number of seventy-six sail, was at sea, under the command of De Ruyter and Tromp, in order to join him. The Duke of Albemarle and Prince Rupert commanded the English fleet, which did not exceed seventy-four sail. Albemarle, who, from his successes had learned to underrate the enemy, proposed to despatch Prince Rupert, with twenty ships, in order to oppose the Duke of Beaufort. Sir George Ayscue protested against the temerity of this resolution, but Albemarle's authority prevailed. Early in June Prince Rupert took part in an action against the Dutch ; and, although, owing to a mist coming on, it may be termed a drawn battle, the English were conspicuous for their bravery. It was the conjunction alone of the French that could give a decided superiority to the Dutch, and in order to facilitate this conjunction, De Ruyter having repaired his fleet, posted himself at the mouth of the Thames. The English, under Rupert and Albemarle, were not long in coming to the attack ; the numbers of each fleet amounted to about eighty sail, and on the 25th of July a fierce and obstinate engagement took place, which ended in the defeat of the Dutch. Shortly afterwards the Dutch fleet, under De Ruyter, cruised near the Straits of Dover, when Rupert came full sail on them ; but the Dutch Admiral, thinking that discretion was the better part of valour, declined the combat, and retired into St. John's Road, near Boulogne, thus sheltering himself both from the English and

from a furious storm which was coming on; Prince Rupert, too, was obliged to retire into St. Helen's to repair the damage he had sustained. In the year 1678 a fleet was equipped, of which Prince Rupert was declared Admiral, and being then allied with France, a French squadron joined them, commanded by D'Etrées. The combined fleet set sail towards the coast of Holland, and found the enemy lying at anchor within the sands of Schonvelt. An action took place on the 28th of May, and another on June 4, when both sides claimed the victory. Prince Rupert was suspected to have been rather lukewarm with respect to the King's projects for subduing Holland, as he did not press so hard on the enemy as his well-known valour gave reason to expect. If the Prince was not favourable to the designs of the court, he enjoyed as little favour from that court, or rather from the Duke of York, who, though he could no longer command the fleet, still possessed the chief authority in the Admiralty. The Prince complained of a total want of everything—powder, shot, provisions, beer, and even water; and he went into harbour, that he might refit his ships, and supply their numerous necessities. After some weeks, he was refitted, and he again put to sea. The hostile fleets met at the mouth of the Texel, August 11th, and fought the last battle, which, during the course of so many years, these neighbouring maritime powers have disputed with each other. In this action Rupert was opposed to De Ruyter, and after a close and bloody engagement, he threw the enemy into disorder; to increase it he sent among them two fire-ships; and at the same time made a signal to the French to bear down, which, if they had attended to, a decisive victory must have ensued. The Prince, when he found his signal fail, and became aware that most of his ships were in no condition to keep the sea long, wisely provided for their safety by making easy sail towards the English coast, the victory remaining doubtful. Peace with Holland was proclaimed in London, on the 28th of February, 1674, and with it ended Rupert's naval career. During the last years of his life he devoted himself to scientific pursuits. Chemistry and the arts were his favourite studies; and the composition of the well-known Prince's metal is said to have been discovered by him.

Prince Rupert was the third son of Frederick V., Elector-Palatine of the Rhine, by the Princess Elizabeth, eldest daughter of James I., King of England. He was born 1619, and though hardly of age at the commencement of the Parliamentary Wars, he offered his services to his uncle, who naturalized him, and advanced him to the dignity of a Peer of England and Knight of the Garter. He exhibited little prudence in his conduct of military operations, but was conspicuous for his impetuous gallantry and chivalrous bearing. He was in all the principal actions with the parliamentary forces, and led the charge at

the battle of Naseby, soon after which he surrendered Bristol to General Fairfax, with little show of defence. For this luckless step the King hastily dismissed him from his service, and ordered him beyond seas, and Rupert had no further share in events till the disaffection of part of the English navy in 1648, of which he took the command in the interest of Charles II. With these ships he harassed the English trade, until Admiral Blake received orders to pursue him. Rupert took shelter in Kinsale, and escaping thence, fled towards the coast of Portugal; Blake pursued and chased him into the Tagus, where he intended to make an attack upon him, but the King of Portugal, moved by the favour which throughout all Europe attended the royal cause, refused Blake admittance and aided Prince Rupert in making his escape. Rupert was subsequently at the French Court with Charles II., and after the restoration distinguished himself greatly. He died in November, 1684. Few naval men exceeded him in heroism, but his successes were rather the reward of his daring courage than great genius or clever tactics. On the 20th of May, 1702, George, Prince of Denmark, consort of Queen Anne, was invested with the title of Generalissimo of all the Queen's forces by sea and land, and afterwards created Lord High Admiral, the Earl of Pembroke having been dismissed from this office with the offer of a large pension, which he generously refused. Prince George, as Admiral, was assisted by a Council, consisting of Sir George Rooke, Sir David Mitchell, George Churchill, and Richard Hill. Though the legality of the Board was doubted, the Parliament had such respect and veneration for the Queen that it was suffered to act without question. Between the period that Prince George was appointed Lord High Admiral and his death in October, 1708, several naval engagements were fought, but we do not find that he took part in any of them. Rooke had defeated the French fleet off Vigo, off Malaga, at Gibraltar (where the French lost five men of war), and off the Lizard; while, in the Mediterranean, Leake had taken sixty French vessels laden with provisions. We pass over one event, in which the glory of our navy was in some measure tarnished by the conduct of some officers in the West Indies, under the brave, honest, and experienced seaman Benbow. During the engagements off Carthagena, though ill-seconded by some of his captains, Admiral Benbow fought to the last. After several days' severe fighting, he, unsupported by the rest of his squadron, renewed the battle with his single ship, when his leg was shattered by a chain-shot; notwithstanding which, he remained on the quarter-deck in a cradle, and continued the engagement. Our historians describe George of Denmark as a Prince of an amiable, rather than a shining, character; brave, good-natured, modest, and humane, but devoid of great talents and ambition. In the stirring times in which he lived his claim to bravery would have

been better substantiated by active service with the fleet than by "living at home in ease." When, on May 4, 1702, Queen Anne's manifesto of war against France was issued it was received by Louis XIV. with a *bon mot*, who remarked, "It is a sign that I grow old when ladies declare war against me." And, no sooner was the bloodstained banner of war unfurled, than Prince George's soul seemed to be "in arms" and anxious "for the fray," for, on the 2nd of June, he proceeded to Portsmouth, and was there received with all the distinction due to "the dear consort of her Majesty." The mighty naval preparations of England for the war were reviewed by the Queen's consort before sailing from Portsmouth. He proceeded next day to the Isle of Wight, where all the newly-raised forces were encamped, and, in the quality of her Majesty's Generalissimo, pardoned several unfortunate men, who had deserted, at the moment they were led out to be shot. The contrast, in this action, to the naval and military cruelties of punishment which will render the reign of William and Mary ever remarkable, evidently sprung from the merciful disposition of Queen Anne, backed doubtlessly by that of her consort, and which augmented greatly the love that her subjects bore to her.

The House of Guelf next claims our attention, and at no period of our history do we find a Sovereign more deservedly popular than George III. The influence of his character in preserving the nation from the contagion of French principles, the steady progress which civil and religious liberty had made under his auspices, the desire which he had ever shown to improve the moral and intellectual condition of his people, had endeared "Farmer George" (as he was called) to all classes of his subjects; and among his sons, many of whom greatly distinguished themselves, none was more beloved than the Sailor King William IV. Prince William Henry, as he was then styled, commenced his naval career as a midshipman, under Captain Digby, in the *Royal George*, of ninety-eight guns, in the year 1779, and, having ascended the subsequent steps, was appointed a Rear-Admiral of the Blue by an Order in Council. He had been previously created Duke of Clarence. In the days when the Prince went first afloat, the system of our men of war was far different from what it is at present; the middy's berth was a wretched, dark, dismal hole—a sort of darkness made visible through the aid of the purser's "dips." The food issued to them consisted of salt pork, beef steeped in brine, weevily biscuits, and fiery rum. Then the stench of the bilge-water, and other villainous odours, was almost insupportable; nor was the constant mast-heading a very agreeable amusement in a gale of wind or snow-storm; yet these were the privations midshipmen had to undergo until about the first quarter of the present century. Now, *tempora mutantur*, the young

gentlemen are well fed, well clothed, well taught, and champagne and white waistcoats are the order of the day. No one was ever more popular on board ship than Prince William Henry, both with his captain and his brother "mids." He was active on duty, and entered with the greatest spirit into the pranks of the mischievous urchins with whom he associated. Upon one occasion there was a regular stand-up fight between the Prince and some other young reefer, in which his Royal Highness got the worst of it; but he was not of a resentful nature, and the two combatants in after life became sworn friends. Dibdin [gives the following description of the royal tar:—

"Able seaman, smart middy, lieutenant, and post,
 By experience he gained every grade,
 And no sovereign but our's of a son e'er could boast
 Such a tar as our William was made.
 When commodore, admiral—ranks bravely won,
 For through each by desert did he pass—
 From the hour when he only stood last at his gun,
 To the day he rose first of his class.
 With Digby, Keate, Rodney, and Hardy, how oft
 Up the shrouds of true honour he ran;
 While Britain, exulting, beheld him aloft,
 By his worth, not the rank of the man!"

In the year 1814 the Duke of Clarence, as Admiral of the Fleet, had the command of the naval escort that attended Louis XIV. across the Channel, on the return of that monarch to his kingdom. In 1827 he was appointed Lord High Admiral, which office he resigned in the following year, after having gained the greatest popularity by the promotion of one hundred and twenty-seven lieutenants to the rank of commander. The elevation of the "bluff sailor king" to the throne was regarded by the profession to which he had belonged with extraordinary gratification. England had not seen a naval sovereign since James II., and the people generally anticipated a glorious reign, from the frankness of character with which they had always found a prominent feature in the character of "the true British Sailor." "All in the Downs the fleet was moor'd," was a line of a song probably better known to William the Fourth than a parody of it, "On Epsom Downs the *fleet* had met," for bred as he was upon another element, he cared little for the race-ground, and there is a well-known anecdote touching the rather incongruous association of the sailor-king with the turf, and which it may not be out of place to repeat. Previously to the first appearance of the royal stud in the name of William IV., the trainer had an audience of his Majesty, and requested to be informed what horses should be sent to Goodwood. "Send the whole squadron," replied the king; "some of them, I suppose, will win." William has thus been described by Dibdin:—

"When regal succession encircled his brow,
 With that crown he oft sail'd to defend,
 Once obedient to others, commanding them now,
 Of our tars he's the father and friend;
 Brave hearts, who, as he did, knew how to obey,
 With distinction to hail he delights;
 And age worn by service, old Greenwich can say,
 He protects in their comforts and rights;
 While gratitude renders the toughest heart soft,
 When to recompense worth is the plan
 Of our blue jacket king, in our hearts throned aloft,
 Not for rank, but desert as a man!"

We now approach a gallant sailor of our own time, Prince Alfred Ernest Albert, Duke of Saxony, Prince of Coburg-Gotha, K.G, born 6th of August, 1844, created Duke of Edinburgh. The Duke's first cruise commenced, in the *Galatea* frigate, on the 18th of February, 1867, and ended on the 26th of June in the next year. His Royal Highness' last cruise is too well known to require comment, and those who visit the South Kensington Museum will witness a variety of the most interesting objects collected during his world-wide wanderings. The naturalist will be delighted with the specimens of birds, beasts, and fishes beautifully arranged, and most clearly described; the lovers of artistic handiwork will view with interest the articles from Japan, China, and India; while, as a contrast to these wondrous fabrics, may be seen rude wooden works from savage countries carved with flint or shell for want of implements of steel; a tippet, an article not known in modern dress, made of feathers of birds, and presented by the King of the Sandwich Islands to the young Prince, will make many wish to possess it for a fancy dress ball; the robe made of plaintain tissue would also be equally coveted. That the exhibition has proved popular may be gathered from the thousands that have crowded to see it, and but one feeling seems to prevail, and that is gratitude to the Prince for having thrown open to all classes one of the most interesting sights imaginable. As a sailor the Duke is extremely popular, affable, energetic, and kind; he has won the hearts of all who are brought into contact with him, and the cheers that the crew of the *Galatea* gave when that vessel was paid off at Plymouth, and the Duke's health was proposed, showed how much his worth was appreciated. The sea poet writes:—

"Would you know the ingredients that make up a tar?"

Take of courage and truth *quantum suff.*

A soul unsubdued by toil, tempest and war;

And a body of durable stuff;

A temper quite easy—yet firm in a squall—

When Boreas, that blustering railer!

Blows great guns that shivers stays, braces and all

Save the heart of a true British sailor.

Those who have served on board the *Galatea* could certainly name their gallant and royal skipper as one who possesses the "heart of a true British sailor."

We may add further, that—

"His form is of the manliest beauty,
His heart is kind and soft,
Faithful below he does his duty,"

and we hope it may be long ere he goes aloft; even when he does we trust that—

"Some little cherub that sits up aloft,
Will look out a good berth for poor Jack."

We apologize to the Duke for alluding to him as "poor Jack," but knowing his love for the service, we do not think he will be offended at being associated with even a humble blue jacket.

TRADE AND INSURANCE MATTERS IN COLUMBIA.

(LATE NEW GRENADA.)

NOTES BY COMMANDER W. SYDNEY DE KANTZOW, R.N., 1871.

THIS Republic of South America is a Federal union of nine states, a vast country with an increasing commerce, and has been since the Revolution of 1857, under a good, promising, and firm Government. It is situated at, and forms the north western point of, the continent of South America. The northern seaboard is in the Carribean Sea, and the western seaboard is in the Pacific. The River Magdalena, to which special reference is made in this report, runs into the Carribean Sea, its course is almost due north. The seaboard in the Pacific forms a splendid bay, terminated at the south end by Cape Tumaco, and on the northern end by Cape Burica. The principal staple exports are Tobacco, Indigo, Hides, Coffee, Native Manufactured Straw Hats, Jesuits Bark, and the products of the gold and silver mines. The insurance of these products, though not a large business, is principally effected on the Continent, because the foreign offices, principally Paris, offer to take risks at lower rates than can be obtained in London.

The States of Columbia are situated on the right and left banks of the River Magdalena, and extend to the shores of the Pacific. The country is thinly populated, but very productive; its resources are inexhaustible, and are being developed by time and the aid of steam.

The River Magdalena is the grand thoroughfare of the country, by which nearly all the produce of the States is conveyed to the ports on the coast. It is navigable to Honda, a distance of 700 miles; above which, in consequence of the rapids, the produce is rafted down by Indians.

On the upper portion of the Magdalena the country is very mountainous and numerous tributary streams flow into the Magdalena.

The principal ports near the mouth of the Magdalena are Carthagena, Santa Martha, and Savanilla.

In proportion, as commerce, shipping, &c., have declined at Carthagena and Santa Martha, they have risen at the Port of Savanilla, situated just half way between these two places; and although Savanilla, being a roadstead, is not as safe and convenient an anchorage as Santa Martha, and possesses no harbour accommodation as at Carthagena, it will, nevertheless, become the port of export and import for the Republic of Columbia, by reason of its situation being the natural outlet of the great river Magdalena, the steamers on which are bringing the produce directly from the heart of the country.

The Port of Savanilla is daily improving; the Government are building custom and store houses; piers are being run out; steam tugs, lighters, and iron-decked boats of 100 tons, established for loading and unloading the shipping in the bay; and, lately, there have been established four lines of ocean steamers, viz.: the French Company from St. Nazaire, the German Company from Bremen, the British Company from Liverpool, and the Royal Mail from Southampton, coming to Savanilla regularly once a month, bringing and taking away full cargoes.

The Magdalena has a delta; the town on the river nearest the coast is Barranquilla, about fifteen miles from the sea, and the only means of reaching thence to the seaports above-mentioned is by a series of small lakes and channels (or Cienegas and Caneos) overgrown with weeds and very shallow. To avoid this difficulty, there is now, lately finished, a direct line of railway to Savanilla, carrying the exports and imports between this port and Barranquilla.

Barranquilla is now a large city created by the river trade, receiving in its warehouses Tobacco, Indigo, Straw Hats, Dye Woods, Coffee, Hides, Quinine Bark, and specie. It is the port of transshipment for the commerce of the Magdalena; built on the left bank of the river, well laid out, and extending principally in the neighbourhood of the railway depôt, and at both ends of the river frontage for the convenience of the steamer traffic.

There are now two companies of steamers on the Magdalena, which navigate as high as Honda, besides private steamers which do not take the choros or rapids (between Conego and Honda). The river steamers are not sufficient for the increasing traffic, and the German Company are

building more boats specially adapted for the river work, and are paying high dividends. The United Company, on the other hand, are repairing their old boats with old pattern boilers, which consume nearly double the quantity of wood fuel necessary for modern boilers. The freights on the river are low from competition, and a good deal of cargo lays at the stations waiting transport. The steamers which have been found the most useful and profitable, are those of 500 tons, built of wood, propelled by a stern wheel, of twelve knots an hour speed, and drawing three feet moderately loaded.

The river is navigable by night as far as Teneriffe, about seventy-five miles above Barranquilla; from that station the practice is to steer in for the bank on either side and make fast to a wood station at sunset. There are forty places of call for cargo on the Magdalena, and the trade is increasing as the roads are developing. In the dry months, when the river is low, the steamers have to abandon the route by way of Mompox and take that by Tacaloa to Banco by the Brazo of Loba, touching at the important town of Maganque, where the national fair is held three times a year.

Carracoli is the port for the whole of the trade of the upper part of the River Bogota, Ambelema, &c. This is the limit of navigation for the large steamers, above Carracoli (or Bodega of Honda). The produce—Hides, Tobacco, Bark, &c.—is floated down over the rapids on rafts by three, five, and sometimes seven Indians on each bamboo raft; the natives, after the disposal of their cargoes, walk back to their homes.

Nari is the port for the State of Antioquia.

Pedrales, situated about two leagues up the River Sogamoso, is the port for the markets of Bocaramanga, Jiron, Pir de Cuesta, and surrounding districts.

The United Steam Company has lately commenced to run a steamer to Pedrales, to facilitate the trade of the important State of Santander.

Puerto Nacional is the outlet for Ocaña and places adjoining, which are becoming every day of greater importance.

Several roads in the State of Santander, down to the river stations, are now in progress, under English superintendence.

From the Plains of Bogota to Honda a railway is determined on, and English engineers are now surveying the line, which will be made by a Government Foreign Loan which, it is said, will be secured on the Salt Mines, &c.

The River Cauca is found, by recent survey, to offer no obstruction in its navigation from the Port of Valdivia, near to where it falls into the Magdalena, at the Boca de Jacaloa, and, if trade and circumstance permit, small steamers will be run there, and even higher, in the state of Antioquia; when practicable.

The river steamers burn wood, which is stowed on deck, and they are supplied at the wood stations on the river side by simply steering in for the bank on either side and making fast to a tree growing down to the water's edge.

The navigation of the river may be said to be uncertain, with its own particular risks and difficulties; with moderate care, however, and a good look out, accidents may be avoided. The only real danger is from snagging, that is, trees coming down the river; the heavy end sinks into the mud, wearing away at the water's edge, but remaining very hard just above the ground in the bed of the river. They are seldom, if ever, met below the Sogamoso, but above that, in a low river they are seen; when the river is high they are hidden, and, if not marked, a steamer coming down with the current striking a snag, generally as hard as a rock, is at once ripped. As the boats are built in compartments, there is generally sufficient time to place her on the bank, when the damaged place is got at from the inside, and repaired sufficiently to proceed to Barranquilla. The proper and only real way to meet this difficulty would be to have a small steamer to raise the snags, and buoy the dangerous places.

Above the Port of Conego, between that and Carracoli, the difficulties of navigation are greater; it is at this stretch that nearly all the river steamers have been lost, the remains of some of them being still seen on the banks. There are three distinct choros or rapids in this reach, which require the employment of a high-class and powerful steamer, with skilful steering, the river in these rapids running from seven to ten knots an hour, occasionally changing its course with eddies more or less irregular, and sometimes a sudden rise and fall in the river. For this reason a steamer has to wait for a high river, which can be seen by the marks on the rocks at the bank; the steamers are generally only two-thirds loaded. If a steamer strikes, the object is at once to place her on the bank where she can be saved and repaired, but the danger is she may fill before there is time to ground her, as took place in the case of the *Barranquilla* steamer belonging to the German Company, which struck in the first rapid coming down in June of this year, and became a total loss. On the whole, the river steamers are well managed under charge of experienced captains, and offer as much security as can be expected under the circumstance of the choros as stated above.

INSURANCE.

The principal risks are from frauds, but these can be provided for by the vigilance of the agents on the spot, and the standing of the parties presenting claims for consideration. The Insurance in the Republic is

not large, but is increasing; the business, however, is principally in the hands of French and German houses, who take risks at lower rates than can be obtained in London.

The products of Pir de Cuesta and surrounding districts, are forwarded by land and water from the place of growth or production to the shores of the Magdalena, whence they are shipped in the river steamers for the coast. A road now being constructed will avoid the canoe and mule conveyance and, greatly reduce the risk of loss or damage before reaching the Magdalena.

Above Carracoli, the produce, as above stated, is rafted down by the Indians with great skill, certainty and regularity, and with regard to insurance these cargoes may be classed as ordinary and legitimate risks, and may be freely taken at moderate rates; but they are at present with difficulty (if at all) covered in London, while German, but more especially Parisian houses, are insuring the trade from Ambelema, &c.

There have been some cases of steamers having struck snags in the river coming down, and lost, but the greater number have been saved by good management, and throwing cargo overboard. No general average case has been established, and, so far as is known, underwriters have never refused to pay for the cargo thrown overboard, as particular average; the law is clear about it, but the practice has been different and has been consented to generally; it will, however, be a question how long, and whether these proceedings will be always accepted.

COMMERCIAL LAW.

The Navigation Laws of Columbia are not yet out in the form of a book, but they were published in the *Diario Oficial Gazette* of Bogota of last year, 1870, and appear to be copied from the French system. The law has established the office of Inspector of Marine, but as yet the office has not become a reality.

The law in the greater part pays more attention to marine affairs than to the river navigation, and this explains how certain conditions of the law are found to be very inconvenient. For instance, the law forbids taking cargo on deck, but there is no doubt that cargoes on deck in a river boat are just as safe, if not safer, than a cargo in the hold. Moreover, it is the general custom and almost a necessity of the River Magdalena steamers to carry cargo on deck. They have a boiler deck and a hurricane deck over that.

The steamers of the United Steam Company have special clauses in their bills of lading that freight must be paid, even if the cargo is lost, and it is not likely that they will take any steps to change the practice.

SPECIE PRODUCTIONS AND CARRIAGE.

The specie produce of Antioquia and Cauca, &c., the States on the left bank of the river Magdalena, is taken to Medellin by the proprietors of the mines. It is there taken charge of by the Government and conveyed with the National Mail to Nari under escort, where it is shipped on board the river steamer for Santa Martha; and for performing this service the Government charge $\frac{3}{4}$ per cent. for Gold, and $1\frac{1}{2}$ per cent. for Silver. This rate has been in force since 1860, at which time the Government reduced the rate for Gold from the original rate of $\frac{3}{4}$ per cent. in order to get it away from private hands into which the carriage had fallen during the revolutionary periods from 1857 to 1860.

The specie products of the mines on the right bank of the Magdalena, which are principally in the neighbourhood of Bogota, are taken by the proprietors of the mines to Bogota the capital, where a certain portion is coined or manufactured into ornaments, the remainder, together with large sums of foreign coin which accumulates in payment of the produce of the country, is placed in charge of the Government for conveyance under escort to Honda, where it is put on board the river steamers and conveyed to Santa Martha; for this service the Government charge $\frac{3}{4}$ per cent. for Gold and $1\frac{1}{2}$ per cent. for Silver. This rate, as well as that for the left bank, covers the charge of conveyance to the seaport.

For the land carriage between Medellin and Nari, and between Bogota and Honda, the Government contract with private individuals; advertisements for this contract, and also the accepted contracts themselves, appearing in the Official Gazette from time to time. The Government supply a military escort for its protection, but the contractor is liable for punctuality, mules, and the conduct of his employés. Some time previous to 1857, the specie consignments were brought down to Calamar, and forwarded from thence to Carthagena for shipment. After the celebrated Post Office robbery at Calamar, about seventeen years ago, the route and destination was changed to Santa Martha. Before the revolutionary periods of 1857, the Government contracted for the river carriage with the United Steam Company, who took it to Santa Martha with one transshipment into smaller steamers at Barranquilla, to go through the canoes, the company being liable for its delivery at Santa Martha in the same state as it was received at Honda and Nari. During the revolutionary periods, the Gold having accumulated in large quantities at Medellin, the Government fearing to convey it to Nari, the proprietors became alarmed and induced the United Company to take charge of it at Medellin, paying to them the $\frac{3}{4}$ per cent., instead of to the Government. After the Revolution, the Government, desirous of recovering the profitable carriage of the specie,

undertook to do it for $\frac{3}{8}$ per cent., which accounts for the difference of rates between the States on the right and left banks of the river. It will thus be seen that the Columbian Government are carriers of the specie consignments, which is joined to the Post Office service, but neither the one nor the other are monopolies in Columbia. The liability to which carriers are subject by law in Columbia, though never put to the test, drew the attention of the Government that it might go hard against them in the event of loss. The Government then passed an Act in Congress, by which they state they will not be responsible for the treasure delivered to their care, but they engage to supply a proper escort and to contract for its carriage, with responsible parties from whom to recover a loss by robbery, fraud, neglect, &c. This Act the Columbian Government are advised will absolve them from making good any claim after that date unless committed by their own employé's. The value of the specie entrusted for transmission by the Columbian Government Post Office for the year 1870, amounted to two million, eight hundred and eighteen thousand, three hundred and ninety-two dollars (2,818,392 dols.).

In August, 1870, on the expiration of the then existing contract with the United Company, it was not renewed, and the carriage of the specie and mails was then placed under contract, solely in the hands of the German Company (Messrs. Hoenigsburg and Wessels). But by the framing and wording of this contract, the German Company engaged to supply the carriage without being made legally responsible for loss which might be the result of want of proper vigilant care and watchfulness.

The treasure by this change was also now exposed to largely increased risk, for the German Company not having small steamers to navigate the canoes had to tranship the specie at Barranquilla from the large river steamer, and put it into a canoe, where it was taken to Pueblo Vijio on the Cienega, and thence placed on mules to Santa Martha. It was thus laid open to attack by armed men on the whole of this route, exposed also to the capsize or other frailty of an open boat, and at the mercy of a few poor natives, who formed the whole protection in the event of the Government messenger being overpowered or seduced.

The transport of the treasure was conducted in this way from August, 1870, to March, 1871, and attracted considerable attention and notice on the river coast, and particularly in Barranquilla (which port has, of late years, from a small native village grown into a town and city with a large foreign trade and population), and when this large amount of treasure was known to come down regularly once a month in this exposed and unguarded way, speculations became rife as to the ease with which it could be captured.

DETAILS OF THE GREAT GOLD ROBBERY OF MARCH, 1871.

In the month of November—that is, three months after the new contract began between the Government and the German River Steamer Company—the idea of robbing the National Mail and capturing the specie was seriously entertained by an English engineer, named Duncan, serving in that capacity on board the German Company's river steamer *Barranquilla* (one of the steamers employed in bringing the treasure down the Magdalena). Duncan was joined in this project by V. Pelacio and F. Angulo, both in good society, the one lately a judge and the other a commission merchant, and natives of Carthagena and Barranquilla respectively. These men met at a private club in Barranquilla regularly to discuss the matter, and they induced other members to join, the most noteworthy being G. Fiol (native of Santa Martha), and M. Pio (native of Barranquilla). The latter owned a cattle-pen near the Cienega of the Cuatro Bocas, not far from Barranquilla. It was now proposed by the club to hire negroes to do the work of assault and capture of the treasure, which was to be buried on the land of Pio's cattle-pen until the excitement of the robbery, which would naturally follow, should have blown over.

In the prospect that the coxswain, or patron, of the canoe, named *Ferria*, usually employed in conveying the treasure through the Caneos, could be seduced from his duty, and the capture, by these means made less difficult, proposals were held out by the club, offering him a share of the booty; he, however, stoutly resisted the offer, but he did not divulge or communicate the plot to the Government authorities; he, however, told the whole circumstance in confidence to a friend, in order, as he said afterwards, that the Government should know who the guilty men were in case they actually did assault the mail and he should lose his life in the canoe.

The Governor of Barranquilla (Senor Mollinares) was warned anonymously that the treasure would be attacked on its way to Santa Martha, and in consequence, by his directions, an armed Government escort accompanied the treasure from Barranquilla to this place. This guard was, however, withdrawn after one or two trips, the report being treated as a false alarm, and, some expense having attended the late arrangement of escort, matters went on as before. The plot by the members of the club having been matured, it was resolved to rob the specie from the mail on the first convenient opportunity.

The monthly specie consignment from Medellin, Rio Negro, and Bogota, consisting of gold bars, foreign coin, &c., in boxes, and valued at 155,000 dollars, having come down in the German Company's steamer

Barranquilla on the 25th March to *Barranquilla*, was transhipped from the steamer, as usual, in a cart to the house of Messrs. Hoenigsburg and Wessels, Lloyd's agents, as well as Government contractors, for the carriage of the specie; from thence it was shipped the following day for conveyance to *Santa Martha* in an open canoe (these are formed from trees hollowed out, and the larger size are generally from 20 to 30 feet long, 3 to 4 feet wide, and 2 to 3 feet deep), also supplied by Messrs. Hoenigsburg and Wessels. The canoe on this occasion had a crew of two bogas or boatmen, and a patron or coxswain named *Ferria* (the same man who had overtures made to him as before stated), and two of the men out of the three had been convicted felons.

The Government messenger on this occasion was named *Lorenzo Gonzales*. He was a clerk in the Post Office at *Bogota*, and had been sent in charge of the treasure, acting in the absence of a regular Government messenger (the staff of Government messengers at the Capital having become shorthanded). He came down and embarked in the canoe unarmed, and no weapon whatever was in the canoe but a "machetta," a kind of large sugar-cane knife used for clearing the weeds which obstruct the passage in the canoes. None of the men in the canoe were under obligations to protect the treasure in case of need by exposing their lives, with the exception of the Government messenger, who, as before stated, was unarmed (the regular messengers carry revolvers, &c.); and he had come down for the first time to the coast, knew nothing of the navigation in the canoes, and fell sea-sick when the canoe got into motion on reaching the *Cieneja*, an open lake of the *Cuatro Bocas*. It will thus be seen the specie fell a very easy prey to attack and robbery, and in this way left *Barranquilla* on the 26th March, making for *Cuatro Bocas*, as usual, on its way to *Pueblo Vejo*.

During the night of the 23rd March the seven already-named negroes, or coloured men, having received some provisions from *P. G. Fiol*, in two canoes, provided with masks and armed, proceeded in the direction of *Cuatro Bocas*, and lay in wait just inside a small hidden creek on the left hand, a few yards off from the *Cieneja*, or open lake, and intersected by the *Caneo Socio*, leading from *Barranquilla*. The whole of this place is heavily overhung by large trees and weeds growing out of the swamps, and is the favourite resort of the reptiles of the lake, alligators thickly congregating at this point.

The Government messenger in the mail canoe, had started from *Barranquilla* at 1 p.m., but a strong head wind caused the boat to take seven hours instead of the ordinary four; and, on this account, the canoe did not get through the *Caneo Socio* until near eight o'clock, just as the moon had disappeared behind the thick woods which surrounded this locality. As the canoe drew near the end of this passage or canoe, the

motion, prostrated the Government messenger, and while the coxswain and his men were in the act of stepping the canoe's mast and making sail to cross the lake, Lindao, with his confederate robbers in their two boats, darted out from their hiding-place in the creek, and were alongside the mail canoe with scarcely any previous observation. The Government messenger and coxswain were immediately seized, blindfolded, and made fast to the bottom of the boat, whilst the two bogas, alarmed at the discharge of fire arms, jumped overboard and swam to the bank up the pirate creek. The robbers having removed the treasure into their own boats, sent the mail canoe adrift on the lake, after removing her rudder, poles, and paddles. They then, in their own canoes, crossed over to the island of Carabana, near the Caneo Torribio. Here they buried on the Pio's cattle-pen, nine boxes of the treasure, and some loose gold bars; and 11,267 dols. in gold and silver coin, which also formed part of the specie consignment, was distributed amongst the thieves who then returned to Barranquilla.

The mail canoe remained drifting about the Cienega until daylight, by which time the coxswain managed to cast loose the rope which held him down to the bottom of the boat; he then cast the messenger loose, and taking advantage of a passing fishing canoe's assistance, came back to Barranquilla with the mail bags intact, with the exception of a few loose letters and remittance lists. Information was sent to Pueblo Vejo of the robbery, where General R. C. Viana and thirty men immediately started in pursuit of the robbers, overrunning all the coast and various lakes without success.

At noon, on the 27th, the Government messenger, Gonzales, reached the Government house at Barranquilla, with the information of the robbery, and immediate steps were then taken by a circular to apprise all the authorities of the States and river towns of the particulars, in order to hinder the robbers from having time to arrive and pass through up the Magdalena with their booty, before the authorities were informed. Ferria, the coxswain of the canoe, was now examined, and he at once confessed and related the overtures which had been made to him by Palacio and Angulo, of last November, to rob the treasure. Palacio and Angulo were then arrested and confronted with Ferria, and kept prisoners.

Rewards were offered by Lloyd's Agent of 4,000 dols., and by the Government of 2,000 dols. for the recovery of the specie and apprehension of the robbers. On the news reaching the capital at Bogota, H. M. Chargé d'Affaires lost no time in at once coming down on the Columbian Government, and insisting on the most energetic measures being taken. The Columbian Government appointed the Director-General of the Post Office on the coast to unite with the Government of the ports, and the militia

of the State were to be employed when necessary. On the 9th of April, F. Alvarez, who was the principal hand in the assault of the mail, and had with him a considerable quantity of the stolen coin, found his way to Mompox and began putting these coins into circulation. The rarity of some of this English and American gold there excited suspicion and he was arrested, taken before the Governor, Senor Ribon, and, on further examination, confessed the crime and denounced all the accomplices. He was then taken to Barranquilla.

M. Pio having been arrested, after a lengthened examination and threats, confessed that the specie had been buried at his cattle-pen at Cuatro Bocas.

On the 17th of April, the Governors of Mompox and Barranquilla took a militia force on board the river steamer *Gaira*, and proceeded to Cuatro Bocas; here they went off in boats with Alvarez, Ju, and Pio, and at 6 p.m., arrived at the island of Carabana, through Caneo Torribio, and from a small pool before Pio's yard at his cattle-pen, four boxes of the specie were taken out; they were intact—that is, closed and sealed, but covered in mud and sodden. Five boxes were still missing, besides the loose gold bars and coin. Some days later, under the persevering energy of Governor Molinares, it was found that M. Pio had, during the interval of the time between the robbers burying the treasure on his pen and his arrest, taken out these five boxes and reburied them in an adjoining part of his land near the yard, it being his intention to have secured these for himself after the robbery had blown over or cooled down. Pio having been brought to confess this, they were dug out and placed with the four, making nine altogether, in the bomb proof safe of the United Company in their superintendent's office, an inventory of the contents was found to agree exactly with what was marked on the cases, and also with the information which the respective agents furnished in marks, weight, and numbers.

There now remained to be recovered eleven bars of gold and the gold and silver coin remittance, which had been distributed amongst the robbers at the time of their burying the treasure. Governor Molinares, by public notice, required that all persons who in payment, exchange, deposit, or in any other way should have received any gold coins, American or English doubloons or condors, or double condors, since the 27th March, should present themselves to the Government Office. This had a very good effect.

On the 2nd May, J. R. Ju confessed what he had buried of his share of the booty at Santa Martha; this was then recovered by the President of that State—viz., three bars of gold, fifty-seven American eagles, and a few other coins. On the 4th May, Aimon confessed to his share of the robbery, which had been buried at Barranquilla. Governor Molinares

was conducted by him to a place not far from the railway depôt, and after digging down to the depth of a yard, the following sums were recovered : Three bars of gold, 45 doubloons, 97 American eagles, 67 French gold five-franc pieces ; and on the 9th April, when Alvarez was captured at Mompox, 890 dollars in gold coin were recovered.

Of what Pio put into circulation from first to last, 508 dollars in gold coin were recovered. A man named Santana, an accomplice in the reception of some of the gold coin, committed suicide, but nothing was found in his house, and his confession proved of no use.

All the robbers and accomplices were captured with the following exceptions, viz. :—

John Duncan, an English engineer, serving in the German Company's river steamer *Barranquilla*.

F. Lindao, a coloured man, native of Solidad.

A compadre of Lindao, name unknown, native of Solidad.

John Duncan had married a Columbian native ; he had 100 dollars a month salary on board the *Barranquilla* steamer, and his character was above suspicion up to the time of the robbery. He went boldly in for the crime in November, which became matured in March. Angulo and Palacio, when in prison, having divulged their connection with Duncan, his house in Barranquilla was searched, and the correspondence found there compromised him as the principal aider and manager of the plot from the first. Duncan having been warned by his friends that he would be arrested, escaped from the *Barranquilla* steamer high up the river, and it is reported crossed over into Equador.

Lindao was an intelligent coloured man ; he had before worked on the railway, and he and his compadre both belonging to Solidad, by the assistance and information of their friends, eluded in time the vigilance of the Government, and escaped, making their way first to Rio Hacha, and from thence it is reported to Venezuela.

Rewards are now out for the arrest of these men, and the Columbian Government have sent circulars to their foreign Consuls giving descriptions of the fugitives, while the Home officials have published the exact nature and quantity of foreign coin missing.

It will be seen by the above account that the State Government exhibited very praiseworthy and *energetic* action after the robbery occurred, and the most prominent officers engaged in the recovery of the treasure and apprehension of the robbers, thus vindicating the honour of the country, were the Governors of Mompox and Barranquilla and the Postmaster-General.

But it should be distinctly borne in mind that it was only by a train of very exceptionally favourable circumstances, which cannot be expected

the first day of the month of January 1878, the following
resolutions were adopted: That the Board of Directors
of the State of New York, be and they are authorized
to cause to be printed and distributed to the members of the
Board of Directors, a copy of the report of the Board of
Directors for the year ending on the 31st day of December
1877.

Resolved, That the Board of Directors be and they are
authorized to cause to be printed and distributed to the
members of the Board of Directors, a copy of the report of the
Board of Directors for the year ending on the 31st day of
December 1877.

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1872-1873

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From 1872-1873

... who had shipped with us in 1872...
 ... of the fruits of Spain...
 ... to get a quantity of...
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to occur again, that this specie was recovered. In a country so vast, with its communication so very difficult and uncertain, under laws both mild and lax, with an almost entire absence of police and the majority of the people still ignorant and open to bribes, the chances are greatly against recovery of stolen treasure.

From the facts which have been elicited in this case it has been abundantly proved that proper watchful care has not been taken in the carriage of the specie consignments by land and by water, either by the Columbian Government or the contractors under it, and this robbery has been the result.

Columbia is being opened out by steam, her commerce extending, and large numbers of foreigners are settling in the country which has quite changed past traditions and customs. It has been reported to the Secretary at Lloyd's that large sums of treasure in Columbia are frequently conveyed by small native canoes on the coast, under the care and control of three or four poor natives, without any guard whatever; but it has now been ascertained that whatever may have occurred in times gone by, of late years this has not been the practice, the only instance of the kind recorded is that during the construction of the railway to Savanilla, Messrs. Hoenigsburg and Wessels sometimes brought their remittances from Santa Martha in canoes, but they always had one of the members of their house to accompany, protect and buoy it, in case of accidents, and they discontinued this mode of conveyance after, on one occasion, getting it nearly capsized on the bar at Pueblo Vejo.

FOK'S'LE YARNS

ON BOARD THE "OCEAN WAVE."

BY WILLIAM F. PEACOCK,

Author of "*What I Saw in the 'Golden Valley,'*" "*The Buried City of Uriconium,*" "*Four Months with Madmen and Madwomen,*" "*Under Lock and Key,*" "*Passages in the Life of an Author,*" &c.

I.

POOR COUSIN JACK!

JOSE, who had shipped with us at Malaga, finished his speech in favour of the fruits of Spain, *versus* our more substantial English fare, and commenced to cut a pipeful of "roll."

Bob Harris turned his quid with his tongue (he chewed like Old Boots, did Bob!), rubbed his right eyebrow, and spat eight feet "forred" as the crow flies,—unmistakeable signs of his intention to contradict somebody.

Years before, Bob, when leaping overboard after a drowning messmate, had struck his forehead and lacerated his dexter temple; and the hair had never grown again. In a word, the brow was as bald as the famous wooden box before Rowland's Macassar, got spilt upon it, and changed it into a hair trunk; or even the caput of "Old Ned," the nigger. And ever since, when Bob was spurred by the spirit of contradiction, or, as he poetically phrased it, "had got his grumbles up," he invariably cury-combed the scarred place with his sinewy fore-finger. It was equal to nailing the colors to the mast or (even more literally) hoisting the black flag.

"Peart and chippy enough, all this slack about Spanish injuns and pom'grants," said Bob, "but seems to me as how, like one of them darned squashes as the picannies relishes so much at Old Calabar, there's little in the argyment. I calls sich things haida to the happytite. If you wants a tightner go in for three pounds of beefsteak, says I; none of your falderal suggesters! Why, we'd niver have lickod Bouy if it hadn't been for our heef and mutton. Don't it answer to reason as how a Frog can't contend against a Hox? Talk as you will of the 'wooden walls of England' and the 'bularks of the State'; its our bullocks as makes them what they are, and us to 'rule the waves,' as Roole Brittany sings."

When Bob stopped a minute to turn his quid—
 "I hope you know," said Rufe Underwood, "that 'bullocks and bulwarks' is a bad old pun."

"No, I don't," says Bob, "and don't care; and as for puns, I don't know what they are. I never see one aboard any ship I ever sailed in, leastways if I seen it I must a mistook it for summat else." And Bob spat again, defyingly.

"Now I goes for pork," said Sheky (he always went by that name, though his real one was Mesbeck Jenkins); "land-lubbers calls it a close meat, and tells us it's indigestible, but there's nobody sleeps better nor me, and there's nothing I relishes more."

"So 'tis," said Bob; "one fellow's meat is another fellow's pison; country and bringin' up has much to do with the matter, I expex. Look at them root-grubbers in Afriky; the beggers thrive on what seems as how wouldn't support a church mouse, let alone a cock-maggot!"

"I've heerd as how pork makes a chap walk in his sleep," said Tom Joyce; "rouses him up somehow, though he knows nothing about it at the time; what the larned folk calls 'snobdanielism'!"

"You're wrong in the word, Tom!" interrupted Sheky Jenkins, himself unconsciously proving how ready we are to correct others when we ourselves are as faulty as they; and to see the mote in our brother's eye while the beam is in our toun; "it's different altogether, I tell ye. I've heerd Parson Griffiths make use on it when I were a dady,

and Parson knowed his langwidge from, as they say, 'Alphy to Homigy, for he were one o' the quality, d'ye see; and it weren't no snobdaniefism at all!"

"Sleep-walkin's a hawful thing," said Bob Harris; "call it by any name as how you pleases you can't alter that fact."

"People who live on vegetables and fruits," said José, still clinging to the first subject of this fok's le talk, "seldom or never walk in their sleep."

"People as eat roast beef and plum duff never walks in theirs," said Bob, not to be done.

"It's pork as does it," said Tom Joyce.

"It's not," said Sheky, knocking out the ashes of his pipe as though he were silencing all opposition; "pork's the finest food in the world. If the Jews had only eaten it they'd never have been cursed and scattered as they are; and them Mussel chaps in Turkey would be a better lot altogether. My grandfather liked pork—marlinspikes and bobstays! how his knife and folk would go at a nice sparerib!—and he could thrash any man of his weight, he could. As to not sleeping, why, I've know'n him to stick in bed for days drunk together! There's only one thing could have made him walk in his sleep, and that would be if he hadn't had enough pork and wanted some!"

"Do people walk in their sleep?" asked José. "Get up and go about and do things as if they were awake?"

"In ceorse they do!" said Bob Harris.

"I don't know that," quoth Sheky.

"I do!" said Bob.

There could be no doubt on the subject. Bob Harris spoke with authority, as a man might who had personal evidence in his favor.

"Silence for a good yarn!" cried Tom Joyce; "here, Bob! take a swig at my pannikin!"

Silence being called and Bob refreshed, when he had leisurely and critically inspected his quid and found it in a satisfactory state, "for 'baccy," observed he, "is like Bill Thornton's runaway" orse, "it wants lookin' arter, we composed ourselves to listen."

"Ye see, mesmates," said Bob, "mine's a true yarn and a norrible one! It's true, because I were present and seed it for myself; and it's far-rightful, because it ended in Blood! . . . And maybe it's got what school-chaps calls a morril."

"Oh, blow the morril," said Jenkins; "heave ahead with the yarn!"

"Avast there!" cried Tom Joyce; "don't spile what you can't spin!" Bob'll pay out his cable all right without your running foul of it."

"Well, ah, I were saying," said Bob; "and don't belze my ear until I catch a crab, 'cause it's rather unpleasant to the feelin's, as the tonic"

remarked when they proposed to skin him alive; this here yard comes to me at first hand.

"Afore I cut my painter and run away to sea, I were odd lad like at a 'public' in Camden Town; and a fairish berth I had, tob, only I were a young fool and wanted to see the world. One Christmas-time I begged off and went to see my old uncle Joe. Father and mother died when I were no bigger than a bullytin, and Uncle Joe he'd brought me up and 'tended to my eddication hisself, and got me taken on at the inn. Well, when I reached uncle's house I found quite a Christmas party; friends of his and folk I knowed; so ye may judge I were right down pleased. Uncle Joe, he moored me alongside of him, and made as much of me as if he'd been my own parient, or a steam-tug lookin' after 'a wessel. There was all his old chums, a backin' and fillin', and tackin' and yarnin' about, and everybody had something to say to everybody else as they smoked and swiped. You see, I'd got there just in the nick of time for supper; and afore supper-time they were passing a oon-wivial hour in the kitchen, with the fire blazin' up the chimby, as though it was mad with injment. By and bye I missed my cousin Jack,—him and me was about of a age, sry fourteen or fifteen, and he were uncle's only lad, and a fine sperited lad, too, but allers running 'some rig or other, and getting hisself punished.

"'Where's Cousin Jack? Is he ill, Uncle?' said I.

"'No,' says uncle; 'he's not ill, Bob, but he has been misbehavin' of hisself, and I've sent him to bed as I threatened.'

"'Won't you let him come down, Uncle?' says I.

"'No, I won't,' says Uncle Joe; 'and it's no good asking me, Bob. I've been too indulgent to Jack, and I must master him, somehow. I've spiled him in many things, but I made him promise he'd give up smokin' until he were seventeen; 'baccy, Bob, isn't a wholesome thing for growin' lads; and I've found to-day that Jack has been running me in debt for it for the week past, and getting Hankey the grocer to put it down in my bill as "lump." There, when I went over it this morning, I found "lump, 3d.," "lump, 3d.," until I said, "Bless my body and soul, we can't have used so much sugar this week!" And then, when I paid Hankey, I asked what it meant; and I got the truth out of him. Jack had carnied him over somehow,—he's a sharp young scoundrel, is Jack,' said Uncle, with a certain degree of admiration which he could not conceal, 'and got the grocer to put down each ounce of baccy as sugar, thinking I shouldn't notice it! You see, Bob, it's not the money I care about, it's the principle; it's his breaking a solemn promise. A lad should never give his word unless he means to keep it, leastways to his own father; and so, Bob, Jack's punished hisself by being put to bed and cloaking his Christmas. And so, we'll say no more about it,' said Uncle. 'He'll be all the better for his lesson.'

"By and bye the servant gal came to tell us that supper was ready. You see," said Bob, "Uncle was a widower, and being comfort'ble off like, he could afford a gal to do his housework. And so we all went up-stairs. Uncle's house was queerly built. It had one big long bedroom and three little ones, and Uncle Joe used the big room as a sort of 'partickler-day' place; he were rather curious in his ideas, what people call 'hens-egg-trick'; and this here big room was always kept clean and shut up safe when company came to see him on Christmas nights, and so forth. One of the three little bedrooms had an extra door as opened through a bulkhead into this big one; and as we sat down to supper (two tables being anchored end on to each other to accomydate us all) Uncle Joe pointed to the door at the end, and said 'He's in there, is Jack; sound asleep, I dare say!'"

"Now," continued Bob, "I'm going to tell you all about that Christmas party, and what came of it. Uncle Joe and the servant gal had deckrated it for the 'casion. I've told you as how he were a eggs-han-trick character, and he'd a way of making things out of his own 'ead. Same time, wise copies as he'd larned at school stuck in his memory and muddled him-like, eeshpally when he mixed 'em up with his own con-saits and inventions. And so we all saw when we'd got sat down to supper, and brought our selves to an anchor, and looked round the room. There was ink-scriptions drawn on coloured paper, cut out and gluted up everywhere, with berries and holly between 'em, and nice they looked, too. But they wer'n't 'God Save the Queen!' or 'Consider your latter end,' or 'A Merry Christmas to you!' or sich like things as you see in Sailors 'omes and can buy in shops. Not a bit of it! Uncle Joe had writ 'em out of his own 'ead, and wery 'stonishin' some of them was! Let's see," said Bob, with a hitch of his ducks, as though his memory could be literally shaken up; "I remembers some of them there ink-scriptions, 'case I read 'em through arterwards, and got a shillin' from Uncle for admiring of 'em,—for mark, ye! mates," continued Bob, with an air of profound learning, "a horther and a hartis is nat'rally wain of his own pett compositions, 'specially of them as has given him most trouble; and Uncle Joe were a Horther and a Hartis, and told me private as he'd been above a week shapin' out some of these beautiful specimens of natyve poetry and Penmanship —"

- "NECESSITY IS THE MOTHER OF INVENTION,
- AND LOTS OF THINGS TOO NUMEROUS TO MENTION!"
- "A CONTENTED MIND IS A CONTINUAL FEAST;
- A REGULAR BLOW OUT IS GOOD FOR MAN AND BEAST."
- "WHEN POVERTY ENTERS LOVE FLIES OUT OF THE COTTAGE;
- ESAU MADE A FOOL OF HISSELF FOR A MEAL OF POTAGE."

There's wonderful wisdom in *that*," said Bob, "but indeed my Uncle were a wonderful man, though I says it. Why, listen here!" and he went on with the 'ink-scriptions,' while the whole fok's'le seemed impressed:—

"READING IS TO THE MIND WHAT FOOD IS TO THE BODY;
SCOTCHMEN ARE THE WERY DEUCE TO DINK TODDY!"

"WELCOME THE COMING; SPEED THE PARTING GUEST;
NEVER SAY "I'LL Be d—d!" BUT ALWAYS "I'LL BE BIEST!"

"DON'T COUNT YOUR CHICKENS AFORE THEY'RE HATCHED;
TROUSER SEATS NEVER LOOKS WELL IF THEY'RE PATCHED."

"What a 'ed Uncle Joe must have had!" ejaculated Tom Joyce; "but howsomdever I'm a-stoppin' of the yarn. Ax pardon, Bob!"

"Ah," said Bob, with conscious family pride, "I think he were a born *pote*, like him as writ the play of *Hot-'ell-o*, or what's-his-name as made the *Pair-o'-dice Lost*; but I've porpoisely kept the best of Uncle's ink-scriptions to the last, as the Jews did their good wine. Talk of being a scholar! why, listen to these here motteys. I think Unclé took wery partickler pleasure in 'em, 'case he'd printed some of the words in speshal big letters, and given 'em a hextra lot of ink. I don't know," said Bob, thoughtfully, "if it mightn't be worth the while of Government to put up these here motteys in them 'ere schoolrooms as I heerd on when I were last in Liverpool; leastways they'd help young folk through the marsh of intelleck!—

"IT'S BETTER TO BE BORN LUCKY THAN RICH;
IT'S BETTER TO HAVE THE MEASLES THAN THE ITCH!"

"Bray-ro!" cried Sheky; "Year! year! that's what I say! Year! year! Why, when I were ashore at—"

"Belay there, my lad!" said Bob; "your yarn will be good when mine's out. Nô intryrupshuns! Well, yes; there is a powerful lot in that there ink-scription; but the very last one as I remember puts a stopper over all. It's so ter-rue to Natur' an' so helligantly worded:—

"WHEN THOU ART SMITTEN TURN THE OTHER CHEEK;
IF HE HITS-THÉE A GAIN KNOCK HIM INTO THE MIDDLE OF NEXT WEEK!"

There! I considers as how that's a *Hiccup Pome* of itself. I've heerd on the O.D.C. an' the 'ILL LAD,'—scholarl chaps do say as how a Hírishman named O'Mer wrote 'em; but I'm cock sartain as he never did nothing half so fine as that there ink-scription of my Uncle Joe! Howsomdever, to heave ahead:—

"The long room were set out beautiful, with Christmas boughs and leaves, and berries, and looked like the first-class saloon in a steamer, got up to receive the directors; and when we sat down to supper, you never saw a merrier party; and a jolly supper it were sure-lye, for Uncle never did things by halves. I'll tell you about the spread first, and the company afterwards. There was a big goose over agin the stern of the table, and a fine spaterib of pork at the head, and such a round of beef on the starboard side, about midships, as you never see. I can't remember one half of the good things, but I knows there was them there, 'case sarcumstances fixed 'em on my mem'ry like; and then there was a square table in one corner, aside like, with a happle pie on it, and a lump of cheese and salary. Uncle Joe hadn't provided a plum puddin' 'case, you see, his domestick arrangings was limited; as they say, he worn't in the family line like! And a really fust-rate Christmas puddin'," said Bob, with the thoughtful air of an Alexis Soyer, "re-requires as much care as a babby. And it takes a power of knowlidge to sarve it up, as it oughter, with sperrit sauce, pipin' hot, an' smellin' like the Spicey Islands. So, as Uncle had only his sarvant gal to help him, he'd substituted the happle pie, 'case it were good cold, wheeras," and Bob looked a whole library of Cookery Books, "a Christmas puddin' is nowt to speak on 'cept its 'ot!

"I'll just tell you such of the company as I remembers. There was others, but they're no part of my yarn; 'case, d'ye see, in a mixed company there's allers some as sits like stones and eats like croceydiles; as dumb as swash tubs, and as hintent on the grub and licker as ground sharks on one of them pearl-divers as I've seen off S'cotra.

"Chief man there, and what I may call Capt'n of the Mess, was Mister Sullivan! His Christen name were a jaw-breaker! I once seed it at the fut of a letter of hisn to Uncle,—Patrik O'Donnell O'Shawn Terence Fits-jeerall Sullivan! He hailed from the Kings of Munster, so he said; and he'd practysed fizzic on other people, and had a surg'ry; but somehow he couldn't steer aright, and he were forced to steer his vessel aground. So he'd got whiterwashed in the Bankrupcy Court, and giv'n up fizzicking, and lived, I don't know how,—maybe a hit on his own wits, and maybe a great deal out of others; but he were allers re-garded as a wonderfully cute parsonage, and everybody giv' way to him, and dubbed him Doctor Sullivan. His word were law so fur as Uncle were consarned, specially in aliments and diz-eases. And all Uncle's frens looked on the Doctor as a sort of horrycle; and, nat'rally he took the cheer. Then there were Mister Giles, a deaf little man, as kept a sweet stuff shop over the way. He were besides a sorter Cock-washerwoman, he were."

"A what?" said Sheky Jenkins.

"A Cook-washerwoman," repeated Bob, emphatically; "a man as goes out by the double Tides, yer know, to wash linen up in a swash tub with a dolly."

"Never mind Sheky a interruptin' on yer," said a voice from one of the lower Bunks. "Stow your jaw, Sheky! git under weigh again, Bob."

Bob continued, "There was also Peshunner Smuff—he'd fot at Waterloo, and was said to have nearly captured Bony with his own 'and; leastways both of 'em was there, and in course the Peshunner had as good a chance of makin' Bony pris'ner as anybody else, d'ye see! and he'd lost a Hi. Fretful pe'ple did say as Jem, the barman at the "Admiral Benbow," knocked it out once in a turn up; but the Peshunner he claimed to have lost it in a hafrray with three French Hussyars, killing two with his bagnet, an' losing his Hi while shooting the tother one. I never met Wellington," said Bob, "or I'd have axed *him*, 'case in coorse he could have told how the wind lay! Well, then there were Mister Wiggins; he were a dried-up old chap, with a crook in his neck, and had a circle-latin' libe'ry round the corner. I recollects," said Bob, "readin' 'Tops'l Sheet Blocks' from there; also the 'Harrythewsa' and 'Philip Squall' (or some such title); yarns as took a 'old on me, and shaped my coorse for the sea, as I'd a fancy to meet with adventur's an' perform with my 'ands what folks calls feets: also one of the company were a master carpenter, with a stammer as fairly took a feller's breath away to hear him. But Uncle Joe never put his friends aside becuse Natur' had distressed 'em; he were too kind for that, and if anybody had a failin' or a misfortun' Uncle Joe were sure to stick to him if it weren't his own fault. There's not many Uncle Joes now-a-days," said Bob; "rule seems to be to 'temper the wind to the shorn lamb' by paying it over the head and ears as the bosun did the monkey! Way of the world now is to give poor folk a lift by liftin' 'em—overboard!

"Yis! them was the company; leastways the speshall ones; and I remembers two women-frens also. One was Missis Cheedle; she'd a nose like our capt'ins speakin'-trumpet, and she were a widder green-grocery female as had been a old ackquaintance of Uncle's wife afore she died. Last as I recollects," said Bob, "was a cu'rosity; Uncle's sister-in-law. She'd niver been married, and I expecks (if she's livin' still) she's not likely to be. Her name were Hobbs; Miss Terpsy Hobbs; but she was allers called Miss Terpsy. Ye see, messmates," said Bob, "her gran'fathers an' gran'mothers at her baptizim,"—he delivered himself of this Biblical extract as though it were the Articles of War or the Creed of St. Athanasius,—“had chosen to christen her Terpsichorey (I once sailed in a man-o'-war o' that name), and when that there jaw-

breaker is cut down aft it nat'rally becomes (Terpsy). Well, she were a curiosity, surely! She'd a voice as hoarse as our bo'suns, an' hoarser; it seemed to come from a long way down; and she were all one thick-ness. Her timbers was all of a piece, like; no eponsons and no bulgin' midships; but shoulders, and waist, and hips all like each other. Jack, my cousin, used to play off all sorts of marlocks with Terpsy; but she were werry good-tempered.

"What a clatter of knives and folks there was arter we'd fairly got into supper! The Doctor kept everybody alive, and there was no end of jawin' and larfin' and jokin'. Now, I've often noticed," said Bob, "as somebody's sure to open their mouth and put their foot in it when least intended. So 'twas. Just when we all were so merry; just when the Penshunner were tryin' for the twentieth time to find a hopenin' for one of his millingtary yarns about 'Bony; just when Mister Wiggins was tellin' Uncle and me about a new libe'ry book as he'd sent to Lunnon for; just when the Doctor were formerly offerin' of his 'and and 'art to Miss Terpsy, while Missis Cheedle's nose growed rodder and redder as she larked to hear the joke; just then, by some onluky thought or other, says the master-carpenter, 'What a pity it is as our good friend's wife (meaning Uncle's), isn't here!' It were a damper! Everybody hove to, dried up, and looked glum, and do all the Doctor could he couldn't rewive the fun. For, d'ye sec, Uncle had been precious fond of his wife; and when he lost her he always kept off re-ferrin' to the subjeck. It were painful. Well, the master-carpenter tried to cover over his unfortnit raymark by sayin' what a good thing it were as Jack remained! I'm sure we were all inclined to kick that theer master-carpenter, but you see he meant well arter all. Worst was, 'spite of looks an' hints he wouldn't (or couldn't) let the subjeck drop. An' he positifvely begun to talk about folk walkin' arter death! A lively subjeck, wa'rn't it, for a Christmas party? Now, the Doctor liked to show off his knowledge 'specially on deep matters; and in coorse, as a medical man," said Bob, with a wicked twinkle of his eye, "he knowed more about dead folk than most people! So, says he, 'There's no sich thing as the dead coming back again. They did in the age of miracles, but that's past. When a party's under hatches now-a-days he's dished. The dead,' says he, 'sleep the sleep that knows no waking, until, as the pote Dibdin says,' says the Doctor—

"When He, who all commands,
Shall give to call life's crew together
The word to pipe all hands.

The nearest thing to it,' says the Doctor, 'is walking in one's sleep; and that is common to many people.'

“‘Ah,’ says Uncle Joe, who had become grave and thoughtful; ‘my poor wife were troubled in the flesh with that infirmity. I once found her at the second front window, quite asleep and undressed.’

“‘Those who walk in their sleep,’ said the Doctor wery loud and werry impressive, ‘should never be awakened there and then, unless their personal safety requires it. A sudden shock may throw Reason off its balance, and for ever ruin the mind of the sleep-walker. Of course, if he’s likely to bust hisself up or to dash hisself into pieces, it’s a necessity to seize him; otherwise the proper plan is to let him do what he will and watch him, and tell him of it arter. And,’ says the Doctor, ‘as a rule, there’s no dangerous intention in the sleep-walker. He only pursues some image (generally innocent) which is present to his mind, and’——

“‘Just at this moment we heard a sound; the door-handle of the little bedroom was turned soft-like, the door in the bulkhead opened, and we beheld a sight that froze our bloods! There stood Cousin Jack in his long white bedgownd and nightcap; his face dead pale, poor fellow! his heyes wery wide-opened, and contemplaitin’ of wacancy; his jaw dropped and mouth open, breathing heavy. One ‘and stretched out afore him; t’other crossed over his breast. Not a look towards us; it were evident his thoughts and mind were far, far, far away.

“‘Every woice were ‘ushed; our chairs was like moorins, an’ we felt lashed to ‘em; the knives and forks ceased to revolve. And there stood Cousin Jack!

“‘The Doctor whispered, with a solemn look, ‘He-editary! from his mother! On no account attempt to awaken him. It might cause Death or Madness for hever!’

“‘The Penshunner sat like a shot grannydear; the nice bit of spare-rib on the end of his fork harrested, as they say, on its way to his mouth, which remained agape like a hopen seppelcur! Giles, of the sweetstuff shop, turned up his heyes and seemed to pray; Wiggins, of the little libe’ry, trembled all over and leaned upon Uncle Joe, who seemed to have struck on a rock amidships; the master-carpenter made some onmeanin’ motion with his right ‘and, as though he was planin’ a plank. As to Missis Cheedle, I cant’s skarsely speak. She were ‘took to,’ and it showed itself in her nose, which became a sort o’ liver colour, with big drops of parspyrashun on it. Miss Terpsy seemed to swell out on all sides, until she were like a solid square o’ summat, and a Woice, deep bass, hexpressed her feelin’s, though it appeared to perceed from the keelsons of her boots, an’ were as gruff as the master-at-armses, though quite in a whisper, like ‘Well, I niver!’

“‘Slowly, majestikally, the sleepin’ boy sailed on; and the glare of his fixed Heyes was somethin’ hawful. It were clear that his thoughts were

not of this world, but far, far away in the Futur as we're a-comin' too. He sailed up the room, slowly, slowly, fust on the port tack and then on the starboard tack close hauled, with hand outstretched and jaw dropped; then as slowly back again. No thoughts of us! No, no, no! We gazed and shuddered. And then poor Jack steered for the table, and with fixed heyes took the goose aboard.

" 'Don't attempt to wake him,' whispered the Doctor.

" Cousin Jack cast off from the table, and steered back to his bedroom, as into a arber; and when he as slowly appeared agen, his heyes was fixed as ever. It were a 'orrible sight; the glare of them there heyes, like port and starboard lights, an' speshally his dropped jaw, he bein' all in white from 'ed to fut!

" Still dreamin' something, he had sot down the goose in his room; and in the same solem' way he slowly tacked agen up an' down the supper-room, starin' hard at nothin', until he took aboard this time what were left of the sparerib. An' he majestically sailed away and stood into arber with that; and then he dreamily came back, paler than ever, an' his jaw dropped fer-rightful, while his heyes was now like dead cods! While we watched him makin' tacks, he nigh upon missed stays, but at last took aboard the beef. And after it were stowed solem in his bedroom, he come back, slow as ever, for the pie. When we saw him again a-standin' at his bedroom door, his aspeck were enough to scare a fleet. The poor lad stood like a stone statter; jist as if he'd been cut out of a block. Them hawful heyes! that there dropped jaw! they fingers laid like Death across his white breast! He didn't sail like a ship now. This time with very slow steps, like the ghost of Mr. Amlet's friend, an' his pale lips movin' but not a word, he storked all round the table. He stopped at the cheese, an' he stopped at the salary; but sadly shook his 'ed! There were a D-canter of werry red port wine near the Doctor,— it were the great heffect of the hevenin' got in by Uncle Joe a-purpus, —and my sleepin' Cousin Jack, slowly and unconscious, grabbed its neck in his palm. Uncle, trembling all over, made as if to check the attempt, but the Doctor silently signalled him not to do. So, with his far-off gaze and jaw all dropped, the dreamin' lad went slow off with the D-canter.

" What next! After a pause, he appeared agen in the doorway, but came no further. With niver a look at anyone he softly sank upon his knees, his lips moved, though no words was uttered. And then he riz an' went into his bedroom, step by step, and closed the door.

" The Doctor signalled silence, while he went to the keyhole and listened. By and bye he came back. 'The fit's goin' off him,' said he; 'I hear him a breathin' in his bed. He's boned our grub,' said the Doctor; 'our supper's spiled, but never mind; if we'd stopped him in

his dreams, it might have been his instant ruin for life. Let's leave him to sleep! an' let's go downstairs to the kitchen fire. When mornin' comes he'll awake, an' we'll find heverything as he left it, for its only the haction of some fancy.'

"Uncle Joe thought so, too; and we did what we could with the cheese and salary (not speakin' much), and then went down. You may b'lieve there was a hend to our merriment. Terpsy Hobbs tried to say something, but it were not more hintelligible than the heavy rumble of a old cab at a distance.

"When, after some beer and porter, the party broke up, it were arranged as how the Doctor should sleep with me, and so that us two an' Uncle Joe could see how poor Jack were in the mornin'.

"And so good night were said; and Mister Giles and the Penshunner, and the man as had the libe'ry, and the master-carpenter, and Missis Cheedle, and Miss Terpsy took their departur.

"The master-carpenter as had guv sich a misfortnit turn to the conversation sneaked off as if he'd been a-stealin' somebody's spokeshave, and niver looked at Uncle Joe when he said good night! The partin' words of Giles was very applicable to the subjeck, only I don't remember them. Old Smuff didn't say nothin', but he drawed hisself up and saluted Uncle jist as he might have Wellington or Bony. Mister Wiggins promised to look up the word 'snobdanielism' in his biggest Cyclepaydear, and tell us if there was any speshal connexion between sleep-walkin' and Christmas Parties; and Missis Cheedle, rubbin' her red nose, said as how it all came of growin' boys not eatin' sufficient wege-tables. As to Miss Terpsy, she made herself squarer nor usual as she stood on the doorstep an' said in a voice that might have come from the bottom of the crater of Weesivus, 'I sees a speshall Hand in this!'

"I don't know what she meant; mayhap she didn't; but there's some women as says onmeanin' things jist to himpress people with a belief in their pro-found knowledge.

"Well, in the mornin' we met airly,—Uncle, and Doctor, and me; and went to Jack's bedroom door. You bears in mind as we had to cross the supper-room to get to it. When we got into the supper-room our hair riz, and the Doctor and me had to keep poor Uncle Joe from fallin'. For there, on the floor, comin' from that onfortnit lad's room, slowly makin' its way along the boards, an' collectin' in a hawful pool, were a stream of Blood!

"'He's murdered hisself!' moaned Uncle, and fainted clean off. The Doctor and me got him outside and laid him down on the landin', and went back. I were shiverin' all over, and the Doctor looked terrible bad. 'Jack's been a-dreamin' somethin' else,' said he, 'and cut his throat I fear!' We advanced to the bedroom, and the Doctor turned

the handle. The door opened, and we saw a tre-menjus sight as stopped our breath."

"Stone dead!" said Jose.

"A big wownd in his neck!" cried Sheky Jenkins.

"Ripped his belly up!" exclaimed Tom Joyce.

Bob shifted his quid from cheek to cheek, currycombed his bald eyebrow, and spat out fur.

"Well, not zactly!" said he, "though if Jack had been ripped up we might have got at somethin'! No! There he lay, snug in bed but breathin' heavy—I don't wonder!—the goose, and sparerib, and beef half heaten; some loose matches, a pipe, and a candle hevidently burned down in its socket; his clasp-knife hopen, and left in the pie-dish WHICH WERE CLEARED OUT! And as to the Blood, why the beggar had drunk all he could of the Red port wine, and let the rest swill away!"

Amid the general laughter, Sheky found tongue to say, "*But what's the morril?*"

"Why, don't you see?" said Bob. "'LITTLE PIGS HAS BIG HEARS!'"

"Now Rufe," said Bob, addressing Underwood, "it's your Turn for a yarn next."

"All right," said Rufe; and how he acquitted himself the next yarn will show.

(*To be continued.*)

LLOYD'S REGISTER AND THE GREAT STEAM LINES.

TO THE EDITOR OF THE "NAUTICAL MAGAZINE."

SIR,—It has long been a sore subject with Lloyd's Committee, that the great steam lines of this country do not place their vessels upon Lloyd's "Register of British and Foreign Shipping," or submit them to the inspection of the surveyors attached to that book; and, in fact, that they treat committee, book, and surveyors with indifference, if not with contempt.

The committee of the "Register Book" (Lloyd's) like to claim, and like to exercise, an official position in reference to shipping; and it must be very trying to them to find their authority disregarded. As the existing great steam companies increase their fleets, and new lines are forming, the fact that the book committee have lost all control over the best part of the British Mercantile Marine, must be unpleasantly obvious to that important body.

I presume that it was under the pressure of feelings occasioned by this state of things, that Mr. Bernhard Weymouth (one of the chief surveyors of "Lloyd's Register"), when attending before the Megæra Commission to give evidence, took the first opportunity which the question put to him afforded, of having a dig at those ship-owners who do not patronise his committee or their surveyors.

Sir Frederick Arrow asks Mr. Weymouth: "Is there any such stringent examination of Government ships as would lead to the confidence which is felt with regard to the Mercantile Marine, owing to the surveys made under your authority?"

"No" (says Mr. Weymouth), "and I am sorry to say that I think the same answer applies to vessels belonging to large companies as much as to those in the service."

Now, I would ask your readers whether a more unjustifiable and unfounded attack was ever made upon the best part of the great Mercantile Marine of this country. The suggestion is two-fold: 1st. That there is an absence of confidence felt in the vessels of those large companies which do not submit themselves to "Lloyd's Register;" 2nd. That there is no proper examination of such vessels.

What are the facts? Let me enumerate a few, and only a few, of the of the large companies who do not patronise "Lloyd's Book."

The Peninsular and Oriental Company, the Royal Mail Company, the whole of the great Atlantic lines, sailing from Liverpool (viz., Cunard, Inman, Allan, Guion National Anchor line of Glasgow, and Oceanic Companies), the Pacific Steam Navigation Company, and Lamport and Holt's line are specimens of the "large companies referred to." Can Mr. Weymouth tell us whether the public feel a want of confidence in the steamers of those lines? Do passengers refuse to embark in them? Do her Majesty's Government refuse to despatch mails by them? Do shippers refuse to ship by them, or do underwriters refuse to take risks on them at low rates until they submit themselves to the jurisdiction of Lloyd's surveyors, and put down their names for a copy of "Lloyd's Book?" I should like to know whether the confidence felt by the mercantile world and the general public in the steamers belonging to those undertakings is not far greater than the confidence felt in the certificates of Lloyd's surveyors, and whether it is not shown by experience to be fully justified.

I should like to know whether it would add anything to that confidence, or to the safety of the vessels forming the vast fleet owned by those great lines, if Lloyd's surveyors were to superintend the building of such vessels, or survey them periodically.

To come to the second point: does Mr. Weymouth not know that there are examinations of these vessels regularly made quite as stringent as any he or his co-surveyors could institute, and by persons quite as

competent. I presume that he has heard of the Board of Trade Surveyors with their half-yearly surveys, and the Emigration Surveyors (for vessels coming under Passenger Acts) with their surveys every voyage. But putting aside the Government officials, does he not think that the owners of vessels—each vessel costing, perhaps £100,000 or £120,000, and carrying, perhaps, 1,000 passengers and 2,000 tons of cargo at a time—owners whose very existence as great carriers of goods and passengers (keenly opposed as they are by their competitors) depends upon their reputation and their freedom from breakdowns, accidents, or mishaps of any kind, exercise no superintendence over their vessels, and have no skilled superintendent, engineers, or competent surveyors of any kind, to keep a watchful eye upon every ship belonging to their fleet?

Lloyd's do not like to confess it, but the fact is, that not only in regard to the large lines, but also in regard to iron vessels generally, "Lloyd's Register" is falling into the rear. The Liverpool Red Book, or "Underwriters' Registry for Iron Vessels," is supported by surveyors quite as competent as those attached to "Lloyd's Register," and the former book is more valuable and complete than the latter with regard to such vessels, and held in higher estimation by underwriters and the mercantile public generally. But the surveyors to that Book are not so foolish as to expect the great companies, who have their own superintendent engineers, and whose well-earned reputation is their best certificate, to submit their vessels to the surveys of the Iron Registry. And those surveyors would, we venture to say, be the last to support the statement made by Mr. Weymouth, to which we have referred above. They would not be disposed to suggest in public before a committee of gentlemen, who probably do not know the real facts, that the mercantile world do not feel any confidence in the vessels of such companies, and that due and proper precautions are not taken to ensure their seaworthiness and safety.

BLUE MOUNTAIN.

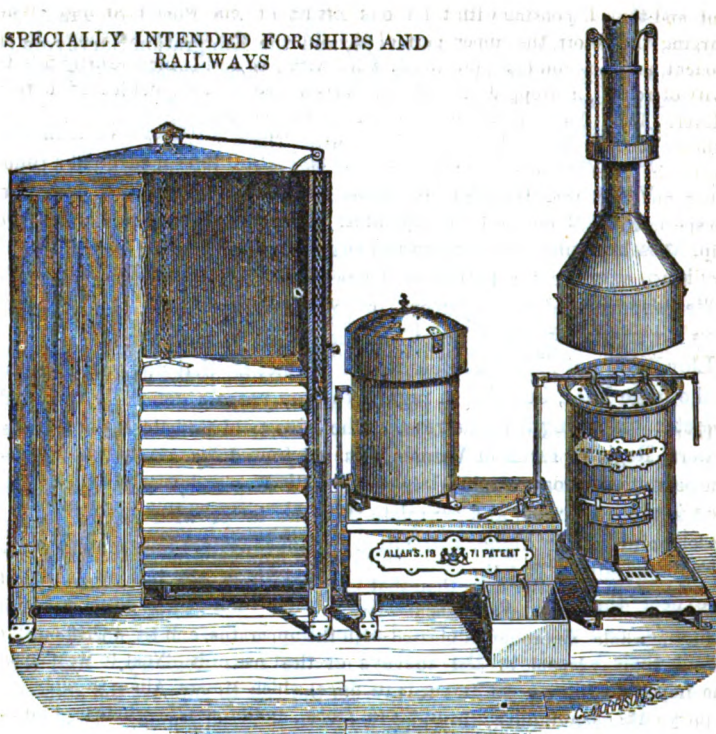
GAS WORKS FOR SHIPS AND LIGHTHOUSES.

THE vast superiority of gas over all other known means of artificial illumination for its efficiency, safety and economy, will, we think, be admitted by all.

The ordinary mode of making gas, however, has rendered its use for ships or lighthouses next to impossible, except in a few cases for the latter. We are happy now to be able to state that this great want is likely to be met, by the introduction of thoroughly good and efficient Portable Gas Works.*

* Messrs. J. ALLAN and Co., 64, Cumberland Street, Calton, Glasgow, or 23, St. Enoch Square.

SPECIALLY INTENDED FOR SHIPS AND
RAILWAYS



The above woodcut represents an apparatus specially adapted for ships. It has, we learn, been in use for a considerable time, at the works of Messrs Allan, in Glasgow, with the most satisfactory results. They use, we have ascertained, the best Lesmahage cannel coal, from which they state that they can obtain upwards of 14,000 cubic feet per ton of 38 to 40 candles illuminating power. With the little apparatus figured above, they can make 960 cubic feet of gas in 24 hours continuous making. This represents a light equal to an average of 312 standard sperm candles an hour for 24 hours, or an average of 413 per hour for 18 hours. The cost would appear to be not more than $\frac{2}{3}$ per day, not including labour, but this is a very small item as we shall see presently.

The space the apparatus occupies is very small. The stove, or generator, is in breadth 21 by 27 inches, and the height, including the moveable top, is 7 feet. The condenser, with purifier on the top, is 2 feet by 3 feet 4 inches. The gas-holder is $5\frac{1}{2}$ by $7\frac{1}{2}$ feet, outside measurement, and can be placed anywhere, and made to any shape. The retort used by Messrs. Allan, which is cylindrical, is placed in a vertical position, surrounded by a fire-clay jacket 3 inches thick, with a free space of $1\frac{1}{2}$ inches between it and the retort all round, for the smoke and flame of the furnace below. There is an iron covering surrounding the jacket, with an inch of free space for ventilation and for the prevention of unnecessary

heat. The top of the retort and the lid are engine-turned, making an air-tight joint, and thus dispensing with the use of soft lime or clay when charging. When charging the retort, the upper part of the stove is thrown up, as shown in our woodcut, and an iron cage, previously filled with gas coal (which exactly fills the cavity of retort), is dropped in. The lid is then pushed back, and locked down by a lever. The whole operation of charging can be done in thirty seconds, and without inconvenience from smoke or dust. The condenser effectually condenses the grosser parts of the gases in the shape of tar and ammoniacal liquor, and discharges them into the tar-well. This arrangement, in fact, forms the speciality of Messrs. Allan's apparatus, and makes all the rest possible for a ship. The hydraulic main, and in fact all water in the process of manufacture, are dispensed with. The purifier is a circular iron vessel, containing a series of sieves filled with sawdust, sand (of a particular kind), and lime, through which the gas percolates, entering by a pipe below from the condenser, after which it passes into the gasholder, which is a collapsible bag, with a wooden top and bottom and cloth sides. The cloth is made specially for the purpose, and is, as far as we can ascertain, perfectly gas-tight and very strong.

There is, so far as our inquiries have enabled us to investigate, really no danger in working this apparatus on board ship, unless from deliberate malice or design. The only *apparent* danger would be that arising from any omission to open or shut the valve on top of condenser when charging; but supposing this omission to occur, we could not discover that anything more serious would happen in the first place than the loss of a few feet of gas, which would ignite and flow harmlessly up the funnel; or, in the latter case, than that the gas in the retort would open the valve when it reached a pressure of about 2 lbs.

On the whole, we are much pleased with the apparatus, and trust that our large shipowners may be able speedily to make practical use of it. Next to its efficiency one important thing in its favour is its price, which Messrs. Allan, in reply to an inquiry on the point, inform us is, "£45, *f. o. b.*, at Glasgow,"—whatever that may mean.

CAPTAIN EVANS, R.N., F.R.S., ON COMPASS DEVIATION.

A LECTURE on the "Present state of our knowledge respecting the Magnetism of Iron Ships, and the treatment of their Compasses," was given at the Royal United Service Institution, on Friday, the 2nd February last, by Staff-Captain Frederick J. Evans, R.N., F.R.S., Chief Naval Assistant in the Hydrographic Department of the Admiralty. The meeting was presided over by General Sir Edward Sabine, K.C.B., late President of the Royal Society, so well known in magnetic science; and was attended by many naval and military officers, and gentlemen interested in science and education.

The aim of the lecturer was to convey to the members of the Institution the progress of knowledge made within the last twenty years relating to the magnetism of iron ships, the treatment of their compasses, and the consequent security of their navigation. This period was chosen, as in the year 1852 the late Dr. Scoresby, in the same theatre, had delivered a lecture, which greatly influenced the minds of the seamen of the day—on the insecurity of the navigation of iron ships, resulting from the system then gradually being introduced into the mercantile marine, of correcting the deviation of ships' compasses by permanent magnets. This system he considered to be opposed to correct principles.

After ample recognition of Scoresby's labours in his cherished branch of science, and his sagacious elucidation of many laws now fully confirmed by more extended experience; it is shown in the lecture that those principles which he had set forth as to the insecurity resulting from magnet correction—based, it is believed, much on the reports of others—were not justified, except when the teachings of science had been neglected or evaded.

Attention was here directed to two papers on the same subject, which the lecturer had read to the Institution in 1859 and 1865 (and printed in its journals) in order to avoid undue repetition. These papers treated in some detail the varied theoretical considerations of the magnetism of iron and especially iron-clad ships; directed attention to the experiments and investigations of the Astronomer Royal, made in 1838-9, on the iron ships *Rainbow* and *Ironsides*; to the labours of the Liverpool Compass Committee in 1855-61; and to the mathematical investigations and formulæ of Archibald Smith, Esq., to be found in the Admiralty Compass Manual.

In calling attention to the present state of our knowledge, the lecturer dwelt strongly on its true foundation being the mathematical treatment. This treatment,—originally designed by the eminent French philosopher, Poisson, and successively developed by the investigations, on a practical basis, of the Astronomer Royal, and by those of Mr. Archibald Smith, who dealt with the actual problem on the footing of Poisson's equations; is now reduced to forms admitting of immediate practical use, and bearing their own physical interpretation on their face.

The lecturer considered that to a comparatively recent date this mathematical treatment of the iron ship's magnetism had scarcely commanded the confidence of the naval profession; that seamen appeared either to fail in appreciating the true value of a scientific mode of treatment, or, hoping that some short road might be discovered, involving no labour or science to follow out, trusted to that alternative for the practical working of the mariner's compass being settled. These popular fallacies are deemed unsound, and prone to do harm, especially as the formulæ

elaborated by the mathematician satisfactorily represent all the observed phenomena in an iron ship ; and no other method of investigation, it is considered, can do so.

The extensive records of the Admiralty Compass Department, which embrace the magnetic history of over one hundred and fifty iron and "composite" built ships of various types, from the armoured-plated ship of 7,000 tons to the unarmoured iron gun-boats of 250 tons, are quoted in proof of the value of a systematic and scientific mode of investigation, and as definitely leading to general principles. The principles thus evolved are in accordance with those laid down by the Liverpool Compass Committee in their three reports 1857-61; the first and most assuring of which, as bringing the subject within the scope of direct investigation, is that "the magnetism of iron ships is distributed according to precise and well determined laws."

Another principle laid down is, that at the position where the navigating or standard compass is usually placed, "the polar force is that from the magnetism of the whole body of the ship, and is nearly uniform, and that we cannot escape from the action of that force by any care in the selection of a place for the compass," and again, "that in iron-built ships, as at present constructed, the ship's polar force is generally so great as to make it necessary to employ magnets to equalise the directive force on different azimuths of the ship's head, even at the most carefully selected position."

With reference to the semi-circular deviation, it is considered that the magnetic action of the interior fittings and equipment of the modern iron steamship are not unfrequently of an amount sufficient to sensibly affect the resultant error as due alone to the hull, although the latter will always be found to dominate ; in fact, each ship has her own polar-magnetic constitution, and that this dissimilarity of constitution in similar types of ships, does not exist when we examine into the values of the induced forces.

The erroneous belief that in every iron ship a place can be found where all the "magnetic influences balance" or a "neutral point" exists, is stated to be true only in a very limited sense, such as in a position where, for example, the rudder-head might be availed of to counteract the whole magnetism of the hull, yet such a position is in general to be avoided, as one of insecurity from the great and irregular changes of magnetic force that may be anticipated under such conditions, and especially on changes of geographic position.

After commenting on the prediction of the changes of deviation in iron ships on distant voyages,—which prediction would appear to exist within reasonable limits—the great loss of directive force in the compass needle, arising from the increased use of iron in the general structure of

the iron ship, is touched on. Comparing the *Rainbow* of 1889, as observed by the Astronomer Royal, with the sailing ship *Clyde* of 1,100 tons, and a fair type of the modern iron ship, observed by Captain Evans in 1868, while the mean directive force to the north, acting on the needle of the former was $\cdot970$, or a loss of only $\cdot080$, as compared with the earth's horizontal force considered unity; in a similarly placed compass in the *Clyde* it was $\cdot870$, or a loss of about one-eighth. At the standard compass of the armour-plated ships of [the Royal Navy the loss is generally one-fifth, and between decks in the armoured turret ships it is found reduced nearly one-half.

These striking facts do not appear to have been recognised by those projectors who aim at demagnetising the iron ship, for *were* it possible to demagnetise or depolarize the ship, this diminution of force or the quadrantal deviation which arises from the same cause, would not be affected.

Passing over the quadrantal deviation, which was proved to arise in the majority of cases by the excess of the thrust on the compass needle from the north *side* of the ship over the thrust from the north end, and which assumes very large values in the armour-plated ships, the heeling error is commented on.

Theoretically considered, the heeling error is described as a complicated, though not an obscure problem; fortunately, practically considered, it does not baffle the careful navigator, nor is it without amelioration by partial correction through the aid of magnets, and especially by a proper position being selected for the compass. The navigator knows that the maximum amount in all cases occurs when the ship's head is *north* or *south* by the disturbed compass, and that it vanishes when the ship's head is *east* or *west* by that compass. So forewarned, he knows when to ascertain by actual observation the extreme amount of error, and when to use precaution.

It is laid down that the worst possible condition for producing heeling error is when an iron ship is built head north, and the compass placed near the stern; as then all the forces conspire to pull the needle downwards and to windward, and thus to produce a heeling error of large amount.

Conversely in a ship built head south, or near it (S.W. to S.E.), with a compass similarly placed, the reversed polarity of the stern of the ship operates against the other forces (vertical induction in beams and vertical induction in vertical iron such as the rudder), and a small heeling error, possibly to leeward, results.

The simple class of observations for finding the heeling error without heeling the ship, and for determining the co-efficients B and C, and thus to form a table of deviations without swinging the ship, are alluded to as real

triumphs in the science of applied navigation ; not only saving labour and time, but ensuring that insecure positions for the compass can be avoided. The degree of approximation to the truth in these methods depends on the approach to accuracy of the values of the co-efficients of quadrantal deviation (D) and the mean directive force to the north (λ).

From the numerous records in the Royal Navy these values can be now fairly estimated, and it is stated that the results obtained by these methods approximate closely to those determined by the complete processes of swinging and heeling.

The lecture further embraced observations on the mechanical correction of compass deviation, and the treatment of iron ships' compasses, wherein several interesting and cogent remarks are introduced. The demagnetising process on a patented plan of the late Mr. Evan Hopkins, C.E., for destroying the polarity acquired while the ship is building and for rendering correcting magnets or deviation tables unnecessary, which were carried out in H.M.S. *Northumberland* in 1867, are also briefly alluded to as having created discussion at the time, and as an unsound project again revived, but not as an incident of progress in magnetic science. These several subjects, together with the closing review of the lecturer, we hope to present to our readers next month.

RIVETED SEAMS.

We have much pleasure in submitting to our readers two papers on the subject of riveted seams in boilers and iron hulls. We have no doubt that these papers will lead to much discussion amongst boiler-makers and iron ship-builders—so much the better. These papers are both from the pens of Board of Trade surveyors of great experience. If the writers are wrong they deserve to be exposed ; but if they are right (and knowing who they are, and their attainments and experiences, we believe they are more likely to be right than wrong), we trust that what they have written will serve as a guide to their younger brethren when surveying and certifying the boilers and hulls of passenger steamships.

The first paper is from the pen of Mr. F. W. Wymer, of the Clyde District ; and the second from the pen of Mr. J. Macfarlane Gray, of Cork, whose name is well known wherever scientific questions in connexion with the construction of steamships and machinery are discussed.

MR. WYMER'S PAPER.

In riveted joints of structures composed of malleable iron plates, in which the joint is the means of the continuity of strength throughout the

structure, for any given plate and any given size of rivets there is always only one proper pitch, which cannot be departed from without a sacrifice of strength. Double-riveted boilers generally have the rivets too close, and this is just as bad as having them too far apart. It also adds to expense, which is worse than useless, owing to the section of the plate at the joint being too much cut away by the rivet-holes, by which the strength of the boiler is proportionately sacrificed.

The following table shows the strength of a riveted joint of the shell of a boiler, or of the plating of the hull of a vessel, in proportion to the strength of the solid plate of which it is constructed, and the diameter of rivets, pitch of holes, and thickness of plate required for that strength. With a view to showing the general usefulness of the accepted standard of strength of 56 per cent. for a single-riveted seam, and of 70 per cent. for a double-riveted seam, the table has been compiled with proportions ranging from 50 per cent. to 80 per cent., whereby the practical difficulties to be met with in obtaining a higher percentage of strength are clearly shown:—

Number of times the diameter of rivet is larger than thickness of plating.	DIAMETER OF RIVET IN PROPORTION TO THE THICKNESS OF THE PLATING.					Percentage of strength at joint.
	Single-riveted lap-joint.	Double-riveted lap-joint.	Treble-riveted lap-joint.	Double-riveted butt-joint, double strapped.	Number of rows of rivets of diameter equal to thickness of plate, to equal plate.	
	Times.	Times.	Times.	Times.		
2	1.25	—	—	—	1.25	50 per cent.
2.22	1.5	.75	—	—	1.5	55 „
2.5	2.0	1.0	—	—	2.0	60 „
2.85	2.3	1.15	.74	—	2.3	65 „
3.3	3.0	1.5	1.0	.75	3.0	70 „
4.0	4.0	2.0	1.33	1.0	4.0	75 „
5.0	5.0	2.5	1.7	1.25	5.0	80 „

NOTE.—Any larger size of rivets may be adopted in proportion to the thickness of plating (but not less), but the pitch of rivet-holes must always be for a given percentage of strength in the proportion to diameter of rivet (as per table), corresponding with the percentage of strength at joint required.

[Mr. MacFarlane Gray's paper, with three whole page diagrams, will be given in our next number.—ED. N. M.]

SAFETY VALVES AND STEAM IN MOTION.

BY J. MCFARLANE GRAY, MEM. INST., M.E. AND N.A.

(Continued from page 108.)

THE amount of the excess of the internal pressure above the load on the safety valve, requisite to maintain a specified amount of opening, depends upon the relation between the pressure of the steam, when it has no motion, and its pressure when in motion. The law, connecting the pressure and the velocity of escaping steam, can be best discussed by referring to the principles of thermodynamics.

This series of papers was, originally, intended to be merely a statement of facts connected with the question of proper area of safety valve for the boilers of passenger steamers, and conclusions considered to be justified by those facts. But it appeared to me that this would have been only the recording of private opinion, unless the steps towards those conclusions were clearly placed upon well-known and recognised principles. Unfortunately, however, the principles involved in this enquiry are but little understood by practical engineers. I have undertaken to demonstrate the principles of the science of thermodynamics, without introducing any statement requiring a previous knowledge of mathematics or algebra, beyond an acquaintance with the first four rules of common arithmetic. If I succeed in this I believe I shall have conferred a great boon upon many of my fellow-engineers, who have been hitherto excluded from any participation in the glorious harvest of truth there is being gathered in this one of the fields of science. The labourers in this harvest have all been working huge and complicated, but yet powerful, differential-calculus-reaping-machines. He who could bring only a sickle has had to stand in the crowd of hungry onlookers picking up a few straws, but afraid to enter the field, as he is told that that crop can be cut only by those machines managed so skilfully by the giants he sees at work. I ask the reader to bear in mind my promise, and not to be afraid, should he find in what follows some things very like algebra; these will be, probably, only other people's machines we are passing; our

work will be all done with the sickle of common arithmetic. But if I, for convenience, write only P for pressure, or V for velocity, a line for *division*, and two lines for *equal to*, this must not be considered to be a violation of our treaty; this is only simple arithmetic.

The thermodynamic theory (literally *heat-work* theory) maintains that *work* and *heat* are interchangeable forms of energy. It is only a particular case of the general theory of energy which asserts that the total amount of *energy* in the universe is a fixed quantity—that it can be produced in one form, only by causing an equivalent amount in some other form to disappear, and that, therefore, *energy* cannot be created and cannot be annihilated.

The word *energy* is literally *in-work*; in common language it signifies the work or *go* we have in us, and in thermodynamics it has in the mechanical sense a parallel signification—the capabilities of a body to perform mechanical work. Energy is either *dormant* or *active*. In gunpowder, in a bent bow, in a raised weight, in the steam of a boiler, in an elevated reservoir of water, we have examples of that form of energy that is called *dormant*, or *latent*, or *POTENTIAL*. The last term is that employed in science, potential energy (literally, *can-do* energy). In the discharged cannon-ball, in the flying arrow, in the falling weight, in the rush of escaping steam, in the fireman's jet from the water-main we have the same energy in its other form, called *active*, or *living*, or *KINETIC*. The last term is that employed in science, kinetic energy (literally, *motion* energy).

In steam in motion, we have an illustration of the distinction to be observed in applying these terms "potential" and "kinetic." Here we have the two forms of energy in the same body at the same time. In its motion, the steam, considered as a moving body, and without reference to its pressure or to its temperature, possesses a certain amount of kinetic energy. This is measurable in terms of its weight by the square of its velocity. In its state of pressure and volume while in motion, and at the same instant, it has also a certain amount of potential energy. These two amounts are not the same energy, but are the quite distinct portions into which that energy, which was only potential in the steam in the boiler, has been split up. But, on the other hand, the portion of the potential energy which still remains in the steam and is indicated by its pressure and its volume, is not distinct from the potential energy of the heat in the steam, it is the same thing; they are not two quantities of equal amount, but one and the same. The potential energy is measured in terms of the product of the heat by the weight, or it may be measured in terms of the product of pressure by volume.

When a stone is thrown up, perpendicularly, into the air, the energy communicated to it is at first wholly kinetic, but, as it ascends, its kinetic

energy is continuously changing into the potential form, until it has reached the turning point, where for an instant it is without motion. Its kinetic has now been wholly transformed into potential energy. The stone has not altered its state, and it is now without just motion as it was when lying on the ground, and yet, it possesses now more energy than it then had; it has in it all the energy due to the work of its elevation. This is a deduction from the hypothesis of the conservation of energy; the energy communicated to the stone cannot be annihilated, it possesses therefore the full amount of energy now in the potential form in virtue of its elevation. This immediately begins to be changed again into kinetic energy, as it gains acceleration in its fall, and that on impact with the earth is transformed into heat; the work of breaking the ground, friction, and the production of electricity, are all forms of mechanical energy, and whose sum will be equivalent to the amount of the energy due to the elevation of the stone.

These transformations of energy are, in their character, similar to the operations of commerce, where merchandise of every description can be exchanged for money, or for other goods. But there is this difference, that in thermodynamics the relative values never vary. As in commerce, silver and gold are the standards of value in which we name the prices of all exchangeable commodities, so also in thermodynamics, we have a coinage of heat and of work. Our sovereign, the standard to which all other forms of energy is referred, is one unit of heat, on the obverse is stamped "Joule's Equivalent," and on the reverse is inscribed "772 Foot Pounds." One unit of heat is the amount required to raise the temperature of one pound of water one degree, and the change for this coin, or its equivalent, is 772 foot pounds of work, that is, the work required to be expended to raise one pound weight 772 feet.

If one pound of water be placed at an elevation 772 feet above sea level, or while at sea level, if it have its temperature raised by one degree, or, if without altering its temperature, or its elevation, it be put into motion at the velocity of 228 feet per second, there will, in either case, have been imparted to it an additional amount of energy equivalent to one Joule or 772 foot pounds. In the sense of equivalents, it is said that in either of these cases one unit of heat has been added to the body. But only in the last has there been put into it any portion of that which gives us the sensation we call "warmth." As in commerce it is common to say that there is so much money in a cargo of cotton, or in the corn-heaps on a granary floor, so in thermodynamics every form of energy is measurable by one Joule coin, the unit of heat; and in general what is so spoken of as heat is not heat at all, but only in some form its equivalent in energy.

That pound of water, at the elevation 772 feet above sea level, may be said to be by its position in possession of one unit of heat, in the form of potential energy, and it is only by taking cognizance of every change in a substance, whether in its state or in its position, that we can realise the strict accordance of the thermodynamic principles with our common experience. The energy which is potential in the water in its elevated position, becomes transformed into kinetic energy by its fall, and its velocity of impact, neglecting the resistance of the atmosphere, would be 223 feet per second, and, as we proceed, we will find that this is just equivalent to one unit of heat, or to 772 feet of fall.

But if the weight were to be dropped, not into the sea, but into some pit below sea level, the energy given out by the fall, and that is potential in it before falling, would be really greatly increased. The one unit was what was available in it, if its fall were limited to sea level. Its height was taken from that as a datum line or zero, because that is the natural available fall. The potential energy represented by altitude depends entirely upon the depth from which that altitude is reckoned, from the sea, or from the bottom of a pit, or from head to tail of a mill-race, as may be available. But to height there is a limit beyond which no deepening of pit could increase it, the centre of the earth, the point where height begins and where depth terminates is that limit, and the altitude of a body above this point would be its *absolute* height, and the measure of its *absolute* energy.

In the same way with temperature we have a natural available datum line, the temperature of melting ice. We have also an artificial zero, that of Fahrenheit's thermometer, and many artificial freezing mixtures, like so many pits below the natural datum line, and we have also a point which, like the centre of the earth, can never be reached, although its position can be ascertained, the absolute zero of temperature where heat begins and cold ends, just as at the centre of the earth height begins and depth terminates. The position of this zero has been ascertained from experiments to be at 461.2 degrees below the zero of Fahrenheit, or 493.2 below the temperature of melting ice.

Energy in the form of motion is called kinetic, and is by this designation distinguished from the energy due to temperature, which is denominated potential energy. Although this distinction is maintained in the language of thermodynamics, that science treats the distinction to be one of degree only, and not in essential character. In thermodynamics heat is considered to be itself only a mode of motion. The condition of a body which gives us that sensation we call "warmth," is supposed to be a state of extremely rapid atomical vibration, so that a hot body is really a store of what has been described above as kinetic energy; but let it be remembered that the word kinetic does not apply to these internal motions, except when steam is treated as an assemblage of molecules.

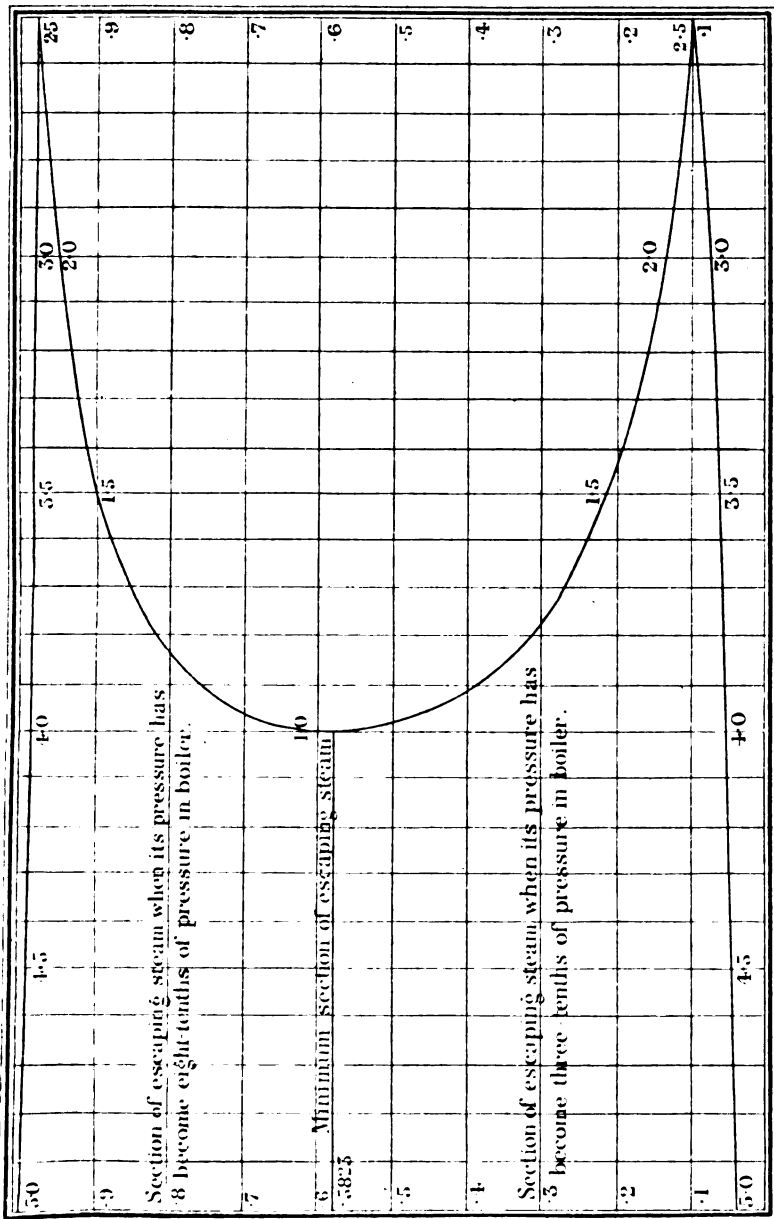


DIAGRAM BY J. MC FARLANE GRAY.

The Pressure of Escaping Steam as affected by the variations in the sectional area of escape.

Mechanical work is pressure through space ; it is not pressure alone, but the product of pressure by the distance through which that pressure or force has been exerted. Active work is therefore moving pressure ; when this is applied to a body that is free to move, it communicates motion to that body. It is found by experiment that a pressure of the force of half an ounce applied to a body one pound weight, that is free to move, will impart to it a velocity of one foot per second, and will increase that velocity, at the rate of one foot per second, for every second during which the force continues to act. When a body is falling free, under the force of gravity, the pressure applied to produce motion is the weight of the body, or 32 half ounces for every pound; and therefore the motion gained is 32 feet per second. The velocities at the end of the successive seconds will be 32, 64, 96, 144 feet. On the first second its average speed would be the mean between 0 and 32, or 16 feet, which is the height through which it would fall in the first second. In the next second its average speed would be the mean between 32 and 64, or 48 feet, and this added to the first 16, gives 64 feet as the height fallen during two seconds. Continuing this computation we would get the heights fallen at the end of the successive seconds to be 16, 64, 144, 256 feet, &c. The work done on the body is the product of its weight by the distance through which it acted, and it will be seen in the above that the square of the velocity is always 64 times the height. We can now find the equivalent for transforming measures of kinetic energy into foot pounds, for we know that, for a pound of matter in motion the square of the velocity in feet per second is 64 times the foot pounds in its kinetic energy. This number is more correctly 64.4, although generally used as 64. Foot pounds of work divided by 772 gives the equivalent in units of heat, therefore the velocity squared, divided by 64.4 and by 772, or the velocity squared and divided by 49,716, or in round numbers by 50,000, will give the equivalent in units of heat for the kinetic energy of one pound weight.

Force in pounds \times space traversed in feet = foot pounds of work.

$\frac{\text{Foot pounds of work}}{772} = \text{Equivalent in units of heat, Fahrenheit.}$

$\frac{\text{Foot pounds of work}}{429} = \text{Equivalent in units of heat, centigrade.}$

$\frac{(\text{The weight of a moving body}) \times (\text{The square of the velocity in feet per second})}{64.4} = (\text{The kinetic energy of the body, expressed in foot pounds.})$

T

$$\frac{\left(\text{The weight of a moving body}\right) \times \left(\text{The square of the velocity in feet per second}\right)}{49716} = \left(\text{The kinetic energy of the body, expressed in units, Fahrenheit.}\right)$$

$$\frac{\left(\text{The weight of a moving body}\right) \times \left(\text{The square of the velocity in feet per second}\right)}{2762} = \left(\text{The kinetic energy of the body, expressed in units of heat, centigrade.}\right)$$

The effect of a pressure applied to a body, free to move, upon the motion of that body, is in proportion to the magnitude of the applied force and in proportion to the time during which it acts. The same force applied for twice the time would produce twice the velocity; for half the time, half the velocity. Twice the force applied for half the time, or half the force for double the time, would also produce the same velocity. Let the force be increased an hundredfold, and applied during the hundredth part of a second, the same speed would result. If while increased an hundredfold the force be applied ten times in one second, each time during the one-thousandth part of a second, the same motion would still result. If, instead of pushing the same ball each time, the force be applied to ten different balls, each the same weight as before, one-tenth part of the velocity could be communicated to each. The effect of the intermittent pressures in producing motion is, therefore, just equivalent to their sum distributed as one pressure, acting with uniform force during the whole time! A pressure of one pound acting for one second will, therefore, be equivalent to the intermittent force which produces thirty-two feet of velocity in one million atoms, each the one millionth part of one pound weight, by acting upon each for the one billionth part of one second with a uniform pressure of one million pounds. Not only will the force be equivalent, but it will not be possible for us to distinguish such an action from a uniform pressure of one pound force. Yet the pressure described would really be a force of one million pounds applied one million times in one second.

The motion produced by pressure must be taken as change in the rate at which the body is moving in the direction in which the force is applied. To add to a velocity, or to take away from it, or to reverse it, is equally a change equivalent to the action of a force during a portion of time. If the body had a motion of 16 feet per second towards the force, the application of a force equal to its own weight for one second would reverse the motion into one of 16 ft. per second from the force. If, instead of a one pound ball, we had to deal with a shower of small shot, perfectly elastic, receiving one pound of them per second, and reversing their motion from 16 ft. per second on, to 16 ft. per second off, the pres-

sure upon the surface sustaining the impulse would be just one pound. It is obvious that this is quite in accordance with the statement, that one pound pressure will change the motion of one pound weight by 32 ft. per second, for the *change* here has been from 16 ft. in one direction to 16 ft. in the opposite direction. The difference between £16 given to you and £16 stolen from you is £32.

The effect of pressure upon a body, to produce motion in it, has been described as being inversely as the weight of the body. For our purpose it will be simpler to adhere to this form of language, but it will be as well for us clearly to understand the sense in which alone it is to be accepted as strictly true. The effect of a given pressure acting upon a given amount of matter for a given time, is to produce a certain velocity, and the same velocity will be produced by the same force in the same time on the same quantity of matter wherever the experiment be made and however its weight may have altered, on a mountain-top or at the bottom of a mine, or by the collision of two aerolites in stellar space; for it is quite independent of what we call gravity. If in one latitude the effect of gravity be to impart in one second a velocity of 32 ft. in each second, then the force to produce in one second a speed of one foot per second in a one pound ball is the pressure measured there by the weight of half an ounce, or one pound divided by 32. But if we change the place of experiment to some elevated region where a falling body acquires a velocity of only 28 ft. per second in each second, the force required to act upon a one-pound ball to give it a velocity of one foot per second in one second, is what weighs there the 28th part of one pound. But the pressure of this weight, as measured by its heaviness in our hand or by a spring balance, is exactly equal to the pressure of the half ounce in the first locality. As a measure of *force*, the pound weight cannot be taken as a perfect standard, but the force that will impart in one second a velocity of 32.2 ft. per second to one pound of matter in any latitude or in stellar space is the standard measure of the British unit of force one pound avoirdupois. In mathematical treatises on this subject the word *mass* is used; it is the weight of a body divided by the velocity in feet per second acquired by a falling body in one second. It is used in physical problems instead of the weight; but not because it measures the quantity of matter in the body, for it does not do so. The *mass* of a body increases as the force of gravitation decreases, and, when introduced into a calculation with its proper divisor, it gives results expressed in forces which compare with the weights of the locality. But Englishmen, I am afraid, will in every region be apt to use the divisor that is correct in England. For the investigation

of the properties of elastic fluids, it will be better not to use this expression, because the forces we deal with are everywhere measured by steam gauges, which are almost universally graduated springs, and therefore unaffected by change of latitude, and they are almost all manufactured near to the latitude of Greenwich. There is another reason for our avoiding this term: the word "mass" has also an every-day application in the sense of "weight," and its use might mislead.

According to the principles of thermodynamics, heat may be considered to be a mode of motion. On this hypothesis, the sensation of warmth, which we feel when we touch a hot body, is produced by extremely rapid vibrations of the molecules of that body. The motions of subdivided matter, in this state of heat, must be defined by the same dynamical laws which we have found to be in operation in the visible external motions of ordinary bodies. In accordance with this hypothesis, let us consider steam and the gases to be assemblages of similar atoms in that state of mechanical agitation we denominate heat, and that the size of each atom in comparison with the total bulk is a mere point, and to be dealt with as such, having weight but no magnitude. Let the vessel containing these atoms be a cube of which the side is one square foot. The atoms are equally distributed throughout the volume, and for the present let us consider the individual atoms to maintain each its own place in the volume vibrating in lines, which are parallel to the sides of the vessel and intersect each other at right angles; and in the first place let the motion of all the atoms be perpendicular to one of the sides of the cube. The strokes will be then delivered upon only that and the opposite side, and the atoms will be sliding upon the other four sides without impulse upon them. Let the distance between the atoms be the N^{th} part of one foot, the number butting on one square foot will be the square of the number N , or N^2 . The atoms are to have all the same velocity—let that be V feet per second. The number of single journeys made by each atom will be $V N$ per second. Each of those atoms that are nearest to the side acted on will hit the side once in every double journey or $\frac{VN}{2}$ times per second. Let the weight of each molecule be M , and let the weight of a cubic foot of the steam or gas be W , both in pounds. The atoms must be considered to be perfectly elastic and to rebound after impulse with reversed but undiminished velocity. The amount of pressure produced by the successive impacts of the atoms will be found thus—

$$\left. \begin{array}{l} \text{Divide the velocity in feet per} \\ \text{second by 32.} \end{array} \right\} \frac{V}{32} \left\{ \begin{array}{l} \text{This gives the pressure during} \\ \text{one second to impart this velo-} \\ \text{city to one pound of matter.} \end{array} \right.$$

Multiply by the weight of each molecule, M .	}	$\frac{VM}{32}$	{ This is the pressure during one second to impart this velocity to one atom.
Multiply by 2.			
Multiply by the number of strokes given by one atom per second, $\frac{VN}{2}$	}	$\frac{V^2MN}{32}$	{ This is the pressure produced by the successive impulses of one atom. V^2 is written instead of $V \times V$, and $\frac{2}{2}$ cancel.
Multiply by the number of atoms hitting on one square foot, $N \times N$.			
Divide by 3, because the action will not be confined to two sides but equally distributed over the six sides.	}	$\frac{V^2MN^3}{3 \times 32}$	{ This is the pressure per square foot if the atoms hit all sides alike.

But if there are N atoms in a line one foot long, the number on a square foot will be N^2 , and in a cubic foot N^3 . Therefore MN^3 in the last expression will be the weight of one atom by the number of atoms in a cubic foot, and therefore just the weight of a cubic foot of the steam or gas. We may therefore substitute W for MN^3 and we will get $\frac{V^2W}{96} =$ the pressure per square foot. The pressure per square inch will be this divided by 144 or $\frac{V^2W}{96 \times 144} = p$, the pressure per square inch.

$$\text{Therefore } V^2 = \frac{96 \times 144 \times p}{W}.$$

Dividing by the weight of a cubic foot is the same as multiplying by the number of cubic feet in the volume of one pound weight. Let B be this volume, then

$$V^2 = 96 \times 144 \times pB.$$

Now the foot-pounds in a volume of steam is the pressure per square inch $\times 144 \times$ the number of cubic feet in the volume. Therefore the last equation becomes

$$V^2 = 96 \text{ pv, or more correctly } = 96.6 \text{ pv,}$$

pv being the foot pounds in one pound of the steam or gas.

But the square of the velocity divided by 64.4 is the kinetic energy in foot pounds of work ; therefore, writing K for this, we have

$$K = \frac{V^2}{64.4} = \frac{96.6}{64.4} \text{ pv}$$

or

$$K = 1\frac{1}{2} \text{ pv.}$$

That is, the kinetic energy in that agitation of the atoms which produces pressure, is in foot pounds $1\frac{1}{2}$ times the foot pounds in product of pressure by volume. Observe that the volume for foot pounds is in units of volume each 12 inches long \times 1 square inch in section—that is, $144 \times$ the volume in cubic feet.

I will proceed in the next number to deduce the laws of expansion, &c., from this thermodynamic molecular theory. I have here repeated statements perhaps unnecessarily, but my object has been to make the subject perfectly intelligible to those even who have never before read any investigation in physical science.

I expected to have gone over more ground this month, and to have got as far as escaping steam. The plate given with this paper is in illustration of that. Steam, when stationary, has its full pressure; immediately it begins to move it loses pressure and acquires velocity. That is, it changes a portion of its potential energy into kinetic energy, and in doing so observes this equation that the sum of its potential and kinetic energies is always equal to the potential energy in the steam when in the boiler. This equation holds good until the steam meets the external resistance, when it begins to do work, overcoming that resistance, and its pressure again increases until it is equal to the external pressure. The diagram represents this equation, supposing the resistance has not begun to act. I have been testing this law in the escape of steam through a tapered pipe beginning at one inch bore. With steam 48 lbs. in boiler, with a pressure gauge at section, 1.2 circular inches, and one at 2.9 circular inches, the pressure at the first was five pounds above the atmosphere, $\frac{15 + 5}{15 + 48} = .3$. On the diagram the pressure at section 1.2 is given as .3 of the full pressure of the steam. The position of this gauge was at $1\frac{1}{2}$ " from the inner flange of pipe. The next gauge was about 10" from flange, the section 2.9 circular inches, and the pressure at same instant was 21 inches of vacuum. Taking the barometer at 29" and one inch of mercury as .49 lb., we have

$$29 - 21 = 8, 8 \times 49 = 3.92, \frac{3.92}{63} = .062.$$

The diagram measures 0.7, but I omitted noting the barometer, and therefore this may be slightly different. The diagram is constructed from calculation only, and will be fully explained as we proceed. The experiment with tapered pipe will be repeated with a bored out pipe, the pipe I used before was only of brazed copper.

(To be continued.)

THE NEW BILL OF LADING.

For various reasons we beg the special attention of our readers, even those who have no special interest in commercial matters, to a very important document, called the Eastern Trade Bill of Lading. In what, considering the enormous growth of commerce in the last few years, may properly be called early times, the bill of lading of commerce was a very simple document. It gave the name of the ship, some sort of description of the goods to which the bill of lading referred, the voyage, and the rate of freight. Under this bill of lading, if the shipowner were prevented from delivering the goods at their destination by any act or omission, directly or indirectly within his control, he was obliged by common law to make good the loss to the merchant. It appears that of late years steamship owners have considered the pressure of these liabilities to be very severe upon them, and they have, from time to time, endeavoured to relieve themselves by special clauses introduced into the bill of lading. This process of exemption, however, went so far, that it ended in great abuse: the bill of lading became a long and complicated document, loaded with exceptions. It seems to have been admitted by merchants that the altered condition of the carrying trade of late years made it just that the shipowner should be relieved from some of his common law liabilities. It appears, also, that the shipowner was prepared to admit that his struggle for exemption had been pushed too far. A conference took place between committees of merchants and shipowners, and the result is the form of bill of lading agreed to by committees of both as an equitable compromise, and apparently now coming rapidly into general use. This form we bind in the present number of the *Nautical*. The history of the very important change thus effected is instructive, and may be very briefly told. The grievance to the merchant had apparently become unbearable. Applications were made by merchants and Chambers of Commerce, both here and abroad, to the Salvage Association on the subject. An investigation was held by that Corporation, and a catalogue of the clauses in more or less common use in steamship bills of lading was prepared, of which a copy is annexed to this article. The consequence of this was a general meeting of merchants interested, by which a committee was appointed for

the purpose of entering into a friendly discussion with a committee of steamship owners. A negotiation begun in this spirit was not likely to be abortive. It has clearly been eminently successful. Instead of a noisy meeting with protests expressed in the strong language with which the world is familiar in such matters, and then perhaps a frantic appeal to Government for protection and for decisive legislation, a friendly meeting, inaugurated with a speech or two of singular moderation, led to negotiations continued in the same temper, and with the resolute intention to deal equitably with the question, and has resulted in this bill, which will regulate the carrying trade more effectually and more justly than any Act of Parliament could have regulated it. There is an underwriting question necessarily pendent to the question so decided, which we are informed begins to be agitated. As far as we can learn, this question scarcely presents as many difficulties as the first. At some future time it may be that we shall be in a position to notice the result of the negotiations respecting this question also.

SOCIETIES, MEETINGS, &c.

ROYAL GEOGRAPHICAL SOCIETY.

February 12th.—SIR H. C. RAWLINSON, K.C.B., President, in the Chair.

The President announced that the Expedition for the Search and Relief of Dr. Livingstone left England on Friday last, and was at that moment probably crossing the Bay of Biscay *en route* for Zanzibar. The subscriptions from all sources, including the balance of the Government grant lying at Zanzibar, amounted to nearly £5,000, of which upwards of £1,000 had been contributed by Glasgow, £350 by Edinburgh, £217 by Hamilton, nearly £500 by the merchants and others of the City of London, and £105 by the Corporation. Of this sum about £2,800 will have been expended by the time the Expedition leaves Zanzibar for the interior, the remainder would be held in reserve for contingencies very likely to occur. He read also to the meeting a letter from Earl Granville to the Sultan of Zanzibar, stating the great interest the Government and people of England took in Dr. Livingstone, and recommended the Expedition organised by the Royal Geographical Society of England to his Highness's good offices; and another to Dr. Kirk, Acting-Consul

at Zanzibar, authorising him to apply £654, the balance of the Treasury grant of 1870, to the purposes of the Expedition. So far, everything connected with the Expedition had been most satisfactorily and expeditiously carried out; and a message ordering the preparation of escort and porters at Zanzibar, sent as far as Aden by telegraph, would reach Zanzibar in the unprecedentedly quick space of fourteen days. Letters had been received from Dr. Kirk of so recent a date as December 16th, and they informed us that no news whatever had been received since September from the interior, but that the war between the Arabs and the people of Unyamwezi would be continued: this would necessitate the adoption of an entirely new route by the Expedition now on its way. Letters were then read concerning Sir Samuel Baker's Expedition. The President stated that he had received from the Prince of Wales the original letters of Sir Samuel, copies of which His Royal Highness had sent to the *Times*. A letter, three days later in date, contained the news that a fertile portion of the Bari territory beyond Gondokora had been acquired, and that Lieutenant Baker would have charge of the steamer for the navigation of Lake Albert Nyanza.

A paper was then read by Sir Harry Parkes (British Minister at Japan), entitled "Captain Blakiston's Journey round the Island of Yezo." Sir Harry explained that his office with regard to the paper was that of reducing into readable bulk the voluminous journals which Captain Blakiston had communicated through him to the Society, and of adding some necessary explanations. Yezo was the northernmost island of Japan, larger by 3,000 square miles than Ireland, and rising in importance from its position and its great fertility and mineral wealth. Captain Blakiston, the well-known explorer of the Yang-tsze-Kiang, since resident in Hakodadi in the south of Yezo, had enjoyed the peculiar advantage of travelling with the privileges of a Japanese official. He went by sea to Akis Bay, on the south-east coast, and thence by land almost entirely along the sea-coast (the interior being without roads or Japanese settlements), round the island to Hakodadi. The native inhabitants are the singular isolated people called Hairy-men, or "Ainos," a robust race apparently of Aryan extraction, and nearest allied to certain sections of Slavonians, distinguished by the thick growth of hair on the body, as well as head and beard.

NOTICES OF BOOKS.

We have to acknowledge the receipt of "The Civil Service Geography, English History, Orthography, Bookkeeping, and Chronology" (5 vols.) "Rudimentary Magnetism," &c., by Sir W. Snow Harris, edited by Henry M. Noad, F.R.S. Lockwood and Co., Stationers' Hall Court. Also of "The Log of my Leisure Hours," by an Old Sailor, (Second Edition) Sampson, Low, and Co. Further notices of these works will appear in due course, but our space in this number is filled up with more pressing matters.

In our advertising columns will be found a notice of a new Quarterly, under the editorship of the very able (late) Chief Constructor of the Navy. We welcome the advent of this Quarterly, for we are always glad when anything manifests itself that is likely to be of advantage to the shipping interest of Great Britain, and we wish the "new Bairn" every success. We cannot, however, ignore the existence of a weekly paper, known as *The Engineer*, nor of another one known as *Engineering*. Both of these papers, we think, do already contain much that is of importance as regards "a correct and scientific treatment of matters connected with naval architecture, marine engineering and steam navigation." Nor can we lose sight of the *Shipping and Mercantile Gazette*, which does, as a matter of fact, contain much that is of importance as regards "Seamanship." Again, we may observe that recent papers in the *Nautical Magazine*, those, for instance, "On Meteorological Subjects," by Captain Toynbee and Mr. Scott; "On Steam in Motion," by Mr. MacFarlane Gray; "On Mercantile Marine Legislation," by Mr. Thomas Gray; "On Compass Deviation," by Captain Evans, F.R.S.; "On the Strength of Rivetted Seams," by Mr. Wymer; "On Correcting the Sun's Declination," by Mr. Gordon, M.A. and "Nearchus;" "On the Mode of Propulsion of Ancient Galleys," by Mr. W. S. Lindsay, late M.P., have, we believe, been of some interest to shipowners and others interested in ships. We are only too pleased to find that the efforts of our contemporaries, and our own efforts, are about to be supplemented by a Quarterly Magazine, under the guidance of so discreet and able a pilot as Mr. Reed.

We are asked to bear testimony to the efficacy of Messrs. Macniven and Cameron's steel pens. We do so with much pleasure, and can, without being prompted by an advertising spirit, confidently speak of their excellence for such work as ours.

MONTHLY ABSTRACT OF NAUTICAL NOTICES.

No.	PLACE.	SUBJECT.
54	ITALY—East Coast—Ortona Mole.	Establishment of a light.
55	BALTIC ENTRANCES—Kiel Fiord—Sand Pit.	Establishment of leading lights.
56	NORTH SEA—Elbe River—Glückstadt.	Alteration in light.
57	JAVA—Sunda Strait.	Protection to Telegraph Cable.
58	CHINA—East Coast—Chapel Island.	Establishment of a light.
59	CHINA—East Coast—Wusung River.	Light and removal of Bar buoys.
60	CHINA—East Coast—Wusung River—Langshan Crossing.	Alteration in bank.
61	JAVA—Sourabaya Strait—Kresik or Grisseo harbour.	Establishment of a light.
62	JAVA—Sourabaya Strait.	Alteration in position of light vessel.
63	ST. LAWRENCE RIVER—St. Roque Shoal.	Position of light vessel.
64	BAY OF FUNDY—Digby Lighthouse.	Fog signal.

NAUTICAL NOTICES.

54.—ITALY.—*East Coast.*—Ortona.—A *fixed white* dioptric light, 36 feet above the sea, and visible 7 miles, is exhibited from the new mole, and the light on the old mole has been discontinued. The new light is intended to mark the entrance of the harbour and the mole in course of construction; it stands 27 yards from the extremity. Position, lat. $42^{\circ} 19' 45''$ N., long. $14^{\circ} 24' 40''$ E.

55.—BALTIC ENTRANCES.—*Kiel Fiord.*—*Sandpit.*—Two *fixed red* lights are exhibited from posts to facilitate the navigation of the inner portion of the fiord. The lights bear N.E. and S.W. from each other, 25 feet and 16 feet above the sea, and when in line lead over the 4 fathom shoal off the village of Ellerbeck.

56.—ELBE RIVER.—*Glückstadt.*—The light on the northern mole is now a *fixed white* light, with a *red* sector, visible between N.E. by E., and E. by N. $\frac{1}{2}$ N. The tower stands 24 yards inside the former light.

57.—JAVA.—*Sunda Strait.*—In order to protect the submarine telegraph cable, which runs from Anjer to Fourth point, and from thence N.W. $\frac{3}{4}$ W., the following marks have been established, and directions given, viz.: Between Anjer and Fourth point three white buoys have been placed, and within which buoys vessels are not permitted to anchor, and also with the lighthouse on Fourth point, bearing between S.E. $\frac{1}{2}$ S.

and E. by S. $\frac{3}{4}$ S., and a second light has been established in Fourth point lighthouse, visible between the two bearings, as a mark by night. Any ship being compelled to drop anchor within the bounds set forth must weigh it carefully, and not set sail until it is certain that the cable has not been lifted at the same time. Should the cable be hooked it must be lifted from the anchor with the greatest care and slipped.

58.—CHINA.—*East Coast.*—*Chapel Island.*—A fixed and flashing white light of the 1st order, showing a flash every half minute, is now exhibited from a black tower; the light is 227 feet above the sea, and in clear weather should be seen 22 miles. Position, lat. $24^{\circ} 10' 20''$ N., long. $118^{\circ} 13' 30''$ E.

59.—CHINA.—*East Coast.*—*Wusung River.*—The light used to lead into this river is a fixed white light, and its bearing in the centre of the navigable channel is S.W. by W. $\frac{3}{4}$ W. A new lighthouse is in course of construction for this purpose, which is expected to be completed in May; when finished, it will exhibit a white light through the channel, and a red light over the remainder of the river.

The two red buoys marking the channel over the Wusung bar, have been removed.

60.—CHINA.—*East Coast.*—*Wusung River.*—*Langshan Crossing.*—It is recommended that, until further notice, vessels should pass to the eastward of the Langshan light vessel, as the Waterman or Middle bank is rapidly extending to the eastward.

61.—JAVA.—*Sourabaya Strait.*—*Kresik or Grissee Harbour.*—A fixed white light of the 6th order is now exhibited; it is 42 feet above the sea, and should be seen 8 miles. Position, lat. $7^{\circ} 9'$ S., long. $112^{\circ} 40'$ E.

62.—JAVA.—*Sourabaya Strait.*—The light vessel at the north entrance of Sourabaya Strait has been moved to the position of the third white buoy to the southward of the vessel. Its present position is in lat. $6^{\circ} 57' 30''$ S., long. $112^{\circ} 38'$ E.

63.—ST. LAWRENCE RIVER.—*St. Roque Shoal.*—The light vessel on the north-western edge is moored in $9\frac{1}{4}$ fathoms, at low water springs, and occupies the position of the black buoy at the south entrance of the narrows between the Middle Ground and the Shoals of St. Roque, in lat. $47^{\circ} 20'$ N., and nearly 4 miles N.W. by W. from the church of St. Roque.

64.—BAY OF FUNDY.—*Digby Lighthouse.*—A steam fog whistle has been established. In thick or foggy weather, or during snow storms, the whistle will be sounded eight seconds in each minute, thus making an interval of fifty-two seconds between each blast. The whistle has been heard in calm weather, 15 miles; with the wind, 20 miles; in stormy weather and against the wind, 6 miles.

HYDROGRAPHIC.

MAGELLAN STRAIT.—PLAYA PARDA (INNER COVE.)

As the inner cove of this harbour affords excellent anchorage for vessels of moderate size, and is accordingly frequented, the navigator is cautioned to follow the instructions laid down by Captain Mayne, R.N., in the sailing directions for Magellan Strait, published by the Admiralty, 1871, and keep on the eastern side of its narrow entrance, in order to avoid the pinnacle rock of 19 feet, found by the Russian frigate *Svetland*.

This rock is nearly in mid-channel of the narrow entrance, with 25 and 27 feet close to, and $6\frac{1}{2}$ fathoms between it and the eastern point of entrance.

CHARTS, ETC., PUBLISHED BY THE HYDROGRAPHIC OFFICE, ADMIRALTY,
IN FEBRUARY, 1872.

Sold by J. D. POTTER, 81, *Poultry, E.C.*

No.	Scale.		r.	d
527.	m = 0·5	Demerara and Essequibo Rivers, approaches ...	2	6
122.	m = 1·0	Maas River mouths.	2	6

OUR OFFICIAL LOG.

MEASUREMENT OF TONNAGE.—An important decision was given on this subject in the Court of Session at Edinburgh on the 30th January last, by Lord Ordinary Gifford. The question before the Court was whether a certain space on the upper deck of the steamship *Danzig* of Leith, belonging to the Leith, Hull, and Hamburg Steam Packet Company, was a permanent closed-in space available for cargo or stores or for the berthing or accommodation of passengers or crew, so as to make the tonnage of such space liable to be added to the register tonnage under the provisions of Sub-section 4 of Section 21 of "The Merchant Shipping Act, 1854." The Lord Ordinary decided in effect that the space in question was not a permanent closed-in space within the meaning of the above-quoted section of the Act, and therefore that the tonnage of it should not be included in the register tonnage of the ship. The facts of the case are briefly these. The *Danzig* has a poop and a forecastle and certain deck-houses amidships for the accommodation of the officers of the ship and

for other purposes. There is also a bridge and a hurricane deck, both of which constitute partial coverings of the upper or weather deck of the ship. In the beginning of 1871 an additional covering was made over the upper deck extending from the after end of the fore-castle to the bridge, which it joined, and it was this closed-in space which was the matter in dispute, the officers of the Board of Trade contending that it was a closed-in space within the sense of the Statute, and that it ought therefore to be measured and the tonnage of it added to the register tonnage of the ship, whilst the owners contended that it was not such a closed-in space as was contemplated by the Act. The grounds of the decision of the Lord Ordinary were, substantially, that the space, although closed in on three sides, was open on the fourth side—that is to say, it was open aft and liable in bad weather to be washed by every aft or beam sea that might be shipped, and consequently was not available for cargo, or, at all events, for perishable cargo, nor, for the same reason, for the berthing or accommodation of passengers or crew. It would seem from this decision that in order to constitute a closed-in space, within the words of the existing Statute, the space must be entirely closed in on every side, so as to be impervious to wind and weather.

INTERNATIONAL TONNAGE.—We learn that the Russian Government has confided the examination of the proposal for an international system of tonnage to a Special measuring Commission, which is likely soon to make its report. In France the Government is occupying itself actively with the manner of putting in force the English system, already adopted in principle. In Germany the English system has been already adopted, but the rules for the application of this system are still the object of negotiation between the Confederate Governments. It is, however, hoped that it will be put in force next spring. In Italy and in Austro-Hungary the British system has also been adopted.

DARDANELLES AND BOSPHORUS.—Her Majesty's Secretary of State has been pleased to approve of the following regulations prepared by the Board of Trade, according to which her Majesty's Consul General at Constantinople is authorised to grant certificates of British ownership, on certain conditions, to owners of unregistered tugs and small vessels trading within the limits of the Dardanelles and Bosphorus, and to Smyrna and the Islands of the Archipelago adjacent thereto, on the one side, and to the Black Sea, in the vicinity of the mouth of the Bosphorus, on the other, which will be recognised as passes by her Majesty's Consular and Naval officers, and by all British authorities to whom the certificates may be exhibited. (a.) The certificate or pass is not to be granted by the Consul to any vessel or vessels, except to such as, by reason of their never visiting a port of registry, cannot obtain a proper

certificate of registry. (b.) Before issuing any such certificate or pass, the Consul is to satisfy himself, by such evidence as he may be able to procure, that the vessel is British owned and lawfully employed. This evidence should be taken down in writing, and signed by the person or persons giving it. (c.) A copy of the certificate or pass, with the written evidence annexed, should in each case be sent to the Foreign Office for transmission to the Board of Trade to be recorded. (d.) The certificate is to be given in the following form:—Form of certificate.—Certificate of British ownership, or pass for vessels not registered, plying or trading within the limits of the Dardanelles and Bosphorus, and to Smyrna and the Islands of the Archipelago adjacent thereto, on the one side, and to the Black Sea, in the vicinity of the mouth of the Bosphorus, on the other. Here follows the name of vessel, her tonnage, number of decks, number of masts, rig, stern, build, galleries, head, framework. After due inquiry into the ownership of the above vessel, I certify upon the evidence adduced before me, that she is *bonâ fide* owned by British subjects, duly qualified to own British ships. Given at this day of 18 . Signed
H.B.M. Consul General for Constantinople.

CHAIN CABLES ACT.—The Board of Trade have, we learn, stated—1. “That, looking to the intention of the Legislature, the term ‘Chain Cable’ used in the Act of 1871, used as it is in conjunction with anchors, may fairly be interpreted to mean a chain cable carried in or with the ship herself, and not a mooring cable. 2. That as the Act requires that three links shall be tested to the higher strain in each length of fifteen fathoms of chain, it will be necessary, in order to get the three links out, that two other links be cut out of the cable. Therefore, that five links altogether will have to be removed from each length of fifteen fathoms. That in lieu of the five links taken out, either one joining link or five new links (as may be agreed on) may be put in by the tester. If, however, the manufacturer wishes to mend his own chain, or put new links in, the chain will have to be taken away from the testing works, as one of the conditions which the Board of Trade have laid down in their arrangement with the Committee of Lloyd’s Register is that licenses will not be granted to any establishment in which the manufacturers’ men are admitted. 3. The present scale of charges is, the Board of Trade are advised, high enough to cover the testing to both strains.”

THE SULINA MOUTHS OF THE DANUBE TONNAGE.—The following rules have, we learn, been agreed to by the European Commission of the Danube:—Whether the tonnage of ships is ascertained in cubic feet or in cubic metres, it shall be stated in all certificates and documents issued by

the European Commission of the Danube both in British register tons of 100 cubic feet each and in cubic metres, and the factor for converting British register tons into cubic metres shall be a multiplier of 2·88, and for converting cubic metres into British tons shall be a divisor of 2·88. In any case in which it appears from the national papers of any ship that she has already been measured in the country in which she is registered, under rules giving results similar to the results given by the "tonnage regulations," and that her tonnage is expressed on her national papers in British tons of 100 cubic feet each, or in cubic metres, then she shall be exempt from measurement so long as she remains of the tonnage and description stated in such papers. In order to ascertain the gross register tonnage of the ship add together—(a.) The gross register tonnage of the space under the tonnage deck ascertained in accordance with paragraph three of this rule: (b.) The gross register tonnage of the space or spaces between the tonnage deck and the deck or decks (if any) above the tonnage deck, ascertained in accordance with paragraph four of this rule: (c.) The gross register tonnage of the poop, deck houses, forecastle, and of all other permanent erections and closed-in or covered-in spaces on the upper deck (if any), ascertained in accordance with paragraph five of this rule. And the total shall be deemed to be the gross register tonnage of the ship. The allowance to be made on account of space occupied in any ship by seamen and apprentices, and entirely and exclusively appropriated to their use, shall not exceed the rate of 500 cubic feet for every 100 tons of the ship's gross register tonnage. In construing this rule the word "seaman" includes any engaged to serve in any capacity on board the ship other than the master or the pilot. The allowance to be made for the space occupied by engine room and coal space shall consist of the tonnage of the space occupied by or required to be enclosed for the proper working of the machinery and boilers, with the addition for coal space of 75 per cent. thereof in the case of ships propelled by screws, and 50 per cent. thereof in the case of ships propelled by paddle wheels: Provided that, except in the case of steamers used exclusively for the purpose of towing, the whole allowance made for the propelling power, on account of engine room and coal space together, shall not exceed one half of the gross tonnage of the ship.

COMPULSORY PILOTAGE AT LIVERPOOL.—During the year 1871, no less than fifty-eight ships came to grief at, or about, the entrance to the River Mersey whilst in charge of compulsory pilots. Of these, forty-eight were British ships and ten were foreign ships. The total tonnage was 58,335, the number of lives lost was 27, and the estimated loss of property is about £160,000. We do not know whether the advocates for abolishing compulsory pilotage will use these facts to enforce their views; but, at any rate, it is not easy to see that the figures we have given can speak much in favour of the present system.

SURVEY OF PASSENGER STEAMERS ON THE STRAITS SETTLEMENTS.—An Ordinance to amend the Law relating to the Survey of British Passenger Steamers (13th November, 1871). A. E. H. Anson, Administrator of the Government.—Whereas it is expedient to exempt British passenger steamers, with a Board of Trade Certificate, from survey under the laws in force in the Colony requiring passenger ships to be surveyed. It is hereby enacted by his Excellency the Governor of the Straits Settlements, with the advice and consent of the Legislative Council thereof as follows:—1. It shall not be necessary for British passenger steamers surveyed and certificated under Part 4 of the Imperial Merchant Shipping Act, 1854, to be surveyed under the Chinese Passenger Ships Ordinance, 1868, or under the Indian Acts, 21 of 1858, or 25 of 1859, to enable such steamers to carry passengers, when such passengers do not exceed the number allowed to be carried, as set out in the said Board of Trade certificate, and so long as such steamers are in the state as to seaworthiness, and otherwise, required by the said Board of Trade certificate for the carriage of passengers. But such passenger steamers shall, in every other respect, be subject to the provisions of the Chinese Passenger Ships Ordinance, 1868, and of the Indian Acts, 21 of 1858, and 25 of 1859, and the master, or other person in charge thereof, before proceeding on a voyage with passengers, under the said Ordinance or Acts, shall be entitled to a certificate, free of charge and without survey, if the number of passengers to be carried does not exceed the number allowed in the Board of Trade certificate for the steamer, and if the surveying officer is satisfied that, since the last Board of Trade survey of the steamer, no serious damage has been sustained by the steamer in her hull, machinery, or equipment, which has not been repaired, so as to make the said steamer seaworthy in the manner required by the provisions of the said Merchant Shipping Act, 1854. 2. This Ordinance shall be read as part of the Chinese Passengers Ships Ordinance, 1868, in so far as the same relates to ships required to be furnished with certificates under that Ordinance, and as part of the Indian Acts, 21 of 1858, and 25 of 1859, in so far as the same relates to ships, required to be furnished with certificates under those Acts respectively. 3. This Ordinance may be cited as the British Passenger Steamers Survey Ordinance, 1871. Passed in Council this 10th day of November, 1871. E. A. IRVING, Acting Clerk of Councils. Assented to by his Excellency the Administrator, the 13th day of November, 1871, and published by his order. J. W. BIRCH, Colonial Secretary.

COMPASS DEVIATION, &C.—EXAMINATION OF MASTERS AND MATES.—The new regulations, to which reference was made in our last number, have been somewhat modified. Candidates for Extra Masters' Certificates

will still be examined [in the whole of the syllabus (Circular 414), proficiency in which became *compulsory*, so far as they are concerned, on the 1st January last; but it will be sufficient if they answer two-thirds of the questions to the satisfaction of the examiner, and they will *not* be required to answer any of the elementary questions on the form Examination 7. Masters or mates who wish to pass a voluntary examination in the syllabus (Circular 414) can, at any time, be examined upon payment to the superintendent of the Mercantile Marine Office of the usual fee of two pounds. If they pass successfully their certificates will be duly endorsed to that effect. If they fail to pass, the fee will not be returned. A few minor alterations also come into effect on the 1st March. The particulars of these can be obtained upon application to the superintendent of any Mercantile Marine Office for Circular 529.

NEW SHIPPING OFFICE FOR LONDON.—The Local Marine Board of London have, so we are informed, obtained, for a central shipping office, a part of the premises of St. Katharine's Docks, to which place the present shipping offices both in the Minories and Dock Street are to be transferred. This activity furnishes further proof of energy on the part of the London Board. Many of our readers know, to their cost, that it is not long ago that the Hammet Street Shipping Office was literally a crimping office. We have reason to believe that the Local Marine Board have now really sweetened it; and when the staff which has been purged and strengthened, remove to the new premises, the evil repute of the old shipping office will be forgotten. The revenue of the Dock Street Home for Sailors will be reduced by the transaction, but we have no doubt that the public and the seamen will pull together and make up the deficiency of funds there. The Home is not a sleeping and eating place only, but contains a library and a lecture room, and is under the management of able officers, whose efforts are always directed towards the seaman's instruction and enlightenment.

HER MAJESTY in Council has, by virtue of the power vested in her by the Merchant Shipping Act, 1854, approved of bye-laws for the regulation and government of the sea and river pilots for the River Tees. Her Majesty has also, by Order in Council, approved of bye-laws for the navigation of the Thames.

BOARD OF TRADE.—The Board of Trade have received a notification that the station of the ship of war on board of which the firmans for the navigation of the Bosphorus and the Dardanelles are to be delivered by shipmasters, has been removed from Galata Point, opposite Gallipoli, and is now anchored opposite Lampsacus.

DRAUGHT OF WATER.—THE Board of Trade have, under the Merchant Shipping Act, 1871, appointed officers to record the draft of water of

ships leaving the ports of Cardiff, Leith Middlesburgh, Newcastle, Swansea, Shields, Sunderland and Hull.

QUARANTINE NOTICES.—ROME.—The Board of Trade have received a copy of a despatch reporting that ships arriving in Italian Ports from the Baltic are relieved from quarantine, and that ships arriving from the Sea of Azov and the Black Sea, provided they have not touched at Constantinople or Smyrna, are also free. CONSTANTINOPLE.—The Board of Trade have received a copy of a telegram from her Majesty's Chargé d'Affaires at Constantinople, reporting that clean bills of health were issued on the 22nd ult. to all departures from that city. SPAIN.—The Board of Trade have received a copy of a circular addressed by the Spanish Government to the Governors of the Maritime Provinces. This circular leaves in full force the decrees of the 28th December, 1868, and the 16th April, 1869. A copy of a further circular has also been received directing rigorous quarantine in the case of vessels arriving at Spanish ports from Salonica, Sansum, and Trebizonde, admitting to free pratique vessels arriving from Galatz, and urging the utmost vigilance with vessels from Buenos Ayres, Messina, Edinburgh, and La Guarra, in consequence of small-pox. DENMARK.—The Board of Trade have received a despatch from Her Majesty's Consul at Copenhagen, reporting the establishment by the Danish Government of quarantine on arrivals from Réval, in consequence of cholera.

MARITIME LAW.

ADMIRALTY JURISDICTION.—INJURIES BY COLLISION.—COURT OF EXCHEQUER, 27TH JANUARY, 1872.—JAMES v. LONDON AND SOUTH-WESTERN RAILWAY COMPANY.—The plaintiff, who was a passenger from Southampton to Guernsey by the defendant's steamer *Normandy*, which came into collision with the *Mary* on the voyage, having sustained personal injury and lost his luggage, brought an action to recover damages. Cross actions for damages were instituted in the Admiralty Court between the defendants and the owner of the *Mary*, and the defendants paid £5,000 into court in lieu of bail. A further action was commenced by the defendants for limitation of their liability to the statutory amount of £15 per ton, and the Judge, although neither the ship nor proceeds were under arrest when the suit was instituted, ordered in general terms that all actions arising out of the collision should be stayed, on the defendants' undertaking to admit their liability as soon as he should pronounce for the damage. The Judge subsequently pronounced that the defendants were solely to blame in the collision, and the sum of £6,276 was brought into court. The defendants then made application to the Court of Admiralty to restrain the plaintiff from bringing this action, and the plaintiff commenced the present proceedings in prohibition. The Court gave judgment for the plaintiff, directing prohibition to issue. They held

that as neither the ship nor the proceeds, nor anything equivalent to the proceeds, were under arrest when the injunction was issued, the Admiralty had no jurisdiction.

BREACH OF CHARTER PARTY.—EFFECT OF BLOCKADE.—COURT OF QUEEN'S BENCH, JAN. 26, 1872.—Defendants agreed to load a cargo of coals at Newcastle, and deliver the same at Hamburg, "restraint of Princes and rulers always excepted," and Hamburg having, before the charter party could be fulfilled, been blockaded by the French, defendants gave notice of their inability to fulfil their agreement in face of the Queen's proclamation of neutrality. It was held that, although the vessel could load at once there was no prospect of the blockade being raised within a reasonable time for completion of the contract, and as the cargo could not be delivered without breaking the blockade and consequent risk of capture and condemnation, the defendants were justified in refusing to complete the contract.

DEFINITION OF SEAMAN.—LIVERPOOL COUNTY COURT, JAN. 27, 1872.—A "STEWARDESS" IS NOT ALWAYS A "SEAMAN."—The stewardess of the steamship *Biafra* claimed balance of wages and ten days double pay under Section 187 of the Merchant Shipping Act, by reason of delay in payment, but, as it appeared in evidence that she was only a servant engaged to wait on cabin passengers, and *had not signed articles*, it was held that she was not entitled to the privileges of a seaman.

DESERTION AND CRIMPING.—BELFAST POLICE COURT, JAN. 26.—A Russian seaman was induced by a crimp to desert from the barque *Barden*. The facts being proved, the deserter was ordered to be imprisoned until the ship was ready for sea, and the crimp fined £10, or three months' imprisonment in default of payment.

DISRATING FOR INCOMPETENCY.—GREENWICH POLICE COURT, JAN. 25.—Complainant proceeded against the master of the *Mayflower* for wages as cook and steward. The master alleged that he had disrated him for incompetency, which appeared to have been duly entered in the official log-book, and read over to him in the presence of the chief mate and other officers. Several instances of such incompetency having also been proved, the disrating was held to be legal, and ordinary seaman's wages only were directed to be paid from date of entry in the log-book.

INSUBORDINATION.—CENTRAL CRIMINAL COURT.—The master of the *Star of Peace* was indicted for unlawfully assaulting a seaman on the high seas, and for imprisoning him without justifiable authority for two months. It was proved that the seaman was a man of indifferent character, and had been guilty of gross acts of insolence and insubordination during the voyage from Melbourne to London, that he had made friendly

overtures to the crew, whose demands for his release amounted to mutiny, and that the master had kept him prisoner and in irons, having fears for the safety of the ship and passengers. The judge was of opinion that this was not a case upon which a jury could be asked to convict the master, *whose acts were justifiable*, and the jury found a verdict of not guilty.

RETAINING CERTIFICATE OF REGISTRY.—SUNDERLAND POLICE COURT, JAN. 23.—The managing owner of the *Mary Jane* summoned her late master, who was also a part owner, under Section 50 of the Merchant Shipping Act for unlawfully retaining the certificate of registry of that vessel. The plaintiff had, it appeared, given notice to the defendant that he had appointed a new captain, and that he, defendant, must deliver up all documents. This the defendant refused to do until he had been paid the value of his share in the vessel. The Court made an order that the certificate of registry should be delivered up, and fined defendant 20s.

TAMPERING WITH SAFETY VALVES.—At Liverpool, recently, three engineers, serving on board a steamship belonging to a Liverpool owner of the greatest respectability, were proceeded against under the Merchant Shipping Act, 1854, for placing an undue weight on the safety valve, and aiding and abetting. Fines amounting to £40 and costs were inflicted. The certificate of the first engineer was cancelled, and those of the second and third were suspended for two years and one year respectively. The ingenuity with which the weights on the valve were gagged, without removing the bonnet of the safety-valve box, has been highly praised by the Government surveyors.

The *Shipping and Mercantile Gazette* contains almost daily Answers to Correspondents, which are replete with matter not only of great interest, but of real value to the Masters and Owners of British Ships, concerning Lay Days, Charter Party, Insurance, Wages, Certificates, Fees, &c., &c. We have made an arrangement with Sir William Mitchell by which he kindly allows the "NAUTICAL MAGAZINE" the exclusive right to use, reprint, and re-arrange and publish these valuable materials. We congratulate our readers on this accession of strength by the "OLD NAUTICAL" and we regard the consent so freely given by Sir William Mitchell as additional evidence of his desire to benefit the Mercantile Community :—

CHARTER BY TELEGRAM.—A vessel arrived at a coal port in the British Channel seeking freight, and a broker offered her owner a coal freight by telegram. This the owner accepted by telegram and agreed to be loaded in eight days. The broker accepted the ship as per owner's telegram, and requested that a signed charter should be sent to him; but, after receiving the charter and keeping it several days, he declined the offer on behalf of his employer. The contract being concluded when the ship-owner's telegram was accepted, his remedy for loss sustained through breach of contract will be against the party on whose behalf the contract was closed.

COAL CHARTER—DEMURRAGE.—A vessel, carrying eight keels, was chartered on the 5th December, 1871, to load in regular turn a special kind of coals specified in the Charter, and was ready to load at her loading place the day after. On the 28th December her master gave the merchant notice that he should claim demurrage for every subsequent day's detention at the rate of £3 per diem. On the 13th January she received the first portion of her cargo, and on the 28th still wanted fourteen waggon's of coal, the delivery of which was uncertain. As the merchant declined to pay any demurrage or allow the master to sign bills of lading under protest, the latter inquired how he was to obtain compensation, and was informed that the Charter-party not giving a lien for demurrage, and bills of lading not having been signed, or, when signed, not admitting of a lien for demurrage, he (the master) cannot detain the goods for any claim he may have for detention of his ship, though he will still have a lien on the cargo for his freight. He is entitled to damages, over and above the ordinary amount of 4d. per ton per day, from the expiration of his lay-days, which should be taken at fourteen days from the time the vessel was on turn and ready to take in her cargo.

COAL LOADING TURN.—A vessel which arrived at Seaham Harbour to load commenced to ship her cargo of coals in turn, but, having been taken off the spot seven times whilst loading to accommodate steamers, had not half her cargo on board at the expiration of fourteen days. Her master having inquired to whom he was to apply for redress, was referred to the *Shipping and Mercantile Gazette* of July 8, 1871, in which it will be observed that the Sheriff Principal of a Scotch Court decided that merchants were bound to load a vessel in regular turn, and to have the coal ready for shipment when that turn came. This case was gained through the Sunderland Demurrage Association.—In 1866, at the Northern Circuit, Durham, in the cause "Helmken v. Schunck," the jury held that a vessel chartered to load a cargo of coals in "turn," and in the "customary" manner, should have been despatched in fourteen days, inclusive of waiting turn and loading.—Also to report of action, "Gann v. Shaw," in *Shipping and Mercantile Gazette*, June, 1871, in Court of Queen's Bench; and "Peter v. Hanson," in *Shipping and Mercantile Gazette*, July 17, 1871. It is, therefore, held that more than fourteen days' detention of a vessel is unreasonable.

DAMAGE IN ROADS.—A vessel lying in the Mumbles Roads in safety, had her jibboom carried away by another vessel seeking shelter. Is not the vessel causing the damage bound to pay for a new jibboom, also for steam pilotage and harbour dues into and at Swansea, necessarily incurred by the injured vessel which went there for repairs?—The vessel having done the damage is liable to pay for the new jibboom, and for the expense of placing it on board.

DAMAGED WHEAT CARGO.—A sailing vessel was chartered to load a cargo of wheat in bulk, which, in accordance with the bill of lading, should have been shipped "in good order and well-conditioned," but when the cargo came along side it was found to be damaged by fire and so much heated and injured that it could not be taken on board the vessel for a voyage of possibly several weeks without great danger of fire.—The Editor of the *Shipping and Mercantile Gazette* considered that the master of the vessel would be quite right in refusing to take a damaged cargo on board, but he should not make the merchant's refusal to provide a sound cargo ground for cancelling the Charter.

DEFICIENT CARGO OF GRAIN.—A master of a small vessel signed a clean bill of lading for a cargo of grain, but in discharging found the quantity deficient. The consignee inquired whether the ship and owners, or the master only, were liable for the short weight, and was informed that grain is liable to shrinkage under certain conditions, and to swelling when damp.—If, therefore, the master can prove that the quantity shipped was delivered, the shipowner is not liable.

DEMURRAGE.—In answer to a question whether a steamer which is obliged to leave her discharging port by stress of weather for the safety of the ship and cargo, is entitled to receive demurrage on the days she stays away, the Editor of the *Shipping and Mercantile Gazette* states that rain and snow have been held not to exonerate a merchant from discharging a vessel within the terms of Charter-party. On the same principle, the elements should not be a bar to the claim for "running days" on demurrage. If a vessel is to discharge in a good and safe port, she having to run out to sea from stress of weather, should fix the charterer, or consignee under bill of lading, whichever is liable, with the loss thereby occasioned.

DEMURRAGE.—A vessel was chartered in London to load seed for Dunkirk. The merchant kept the vessel all the days specified in the Charter for loading and discharging, and two more, which the merchant paid demurrage for; also about three days for discharging. The vessel arrived at Dunkirk, and lay there ten days before she was discharged. The captain could not get settled, as the consignee would not pay demurrage. The broker brought the case before the tribunal, who are chiefly merchants, and they decided for one day's demurrage. The owner inquired whether the merchant is liable for the six days' demurrage which are due to the ship through not recovering from the consignee, and was informed that if the bill of lading did not recite the Charter-party as to demurrage, the consignee would not be liable for the number of days specified for loading and discharging, and the ship would have to be unloaded according to the usage of the port. The charterer would be the party liable unless he limited his liability to the loading.

DISCHARGE OF CARGO OF PIG IRON.—A vessel arrived at Swansea with a cargo of pig iron, consigned. As the bill of lading states that she is to discharge in Swansea dock, the master inquired whether he could be compelled to discharge the cargo under crane, at a loss of 2½d. per ton, and was informed that the merchant cannot compel the master to discharge under circumstances involving a loss to the ship, unless there is an express stipulation to that effect, or that the merchant is prepared to make good the loss; and that, as a rule, the merchant pays for all tackle and machinery over the side, and not belonging to the ship, unless there is an agreement to the contrary, or there is a port usage for ship to pay craneage, and Charter-party stipulates "to discharge according to custom of the port."

LOADING TURN.—A shipowner, who chartered a vessel to load pig iron at Middlesborough for Caen, to take his regular turn in loading, stated that precedence was given to six steam-ships and two large lighters which came after him, and inquired how he was to act. The Editor of the *Shipping and Mercantile Gazette* replied that, if no loading-days are mentioned, the captain should give notice of claim for demurrage, after allowing a reasonable time according to the usage of the port for waiting turn and taking in cargo.

NITRATE OF SODA.—There is no established rule at Lalth for discharging nitrate of soda. Guano is put out at the rate of 35 tons per day. Should nitrate not be discharged at the same rate?—As regards loading and discharging guano, saltpetre, nitrate of soda, and cubic nitre, the rate for in-put and out-put is generally about the same. Thirty-five tons should be put out daily.

PORT OF STOCKTON.—A shipowner whose vessel was chartered with grain from the Baltic to the East Coast or a Coal Port (United Kingdom) asked, with reference to orders to proceed to Stockton, received by the captain on signing bills of lading, whether Stockton can be considered a coal port or port on the East Coast, and was informed that the East Coast, according to usage in Charters, is from the Thames to Berwick-on-Tweed. Stockton is therefore, on the East Coast, according to custom. What was termed the "Coal Ports" extended from Blyth to the Tees included, and embraced Stockton. This latter Port ceased to be a coal-loading Port when Middlesborough was enfranchised, and coals are now shipped from Grimsby, on the Humber, so that Charter-parties should be more explicit in their terms.

PILOTAGE.—A vessel arrived off Dover in boisterous weather and signalled for a pilot. A qualified man put off at considerable risk, and after telling the master that he was not a Trinity Pilot, there being none for the North Sea, asked £25 to Dundee. The master made no objection, and the applicant took charge, but, on discharging him, refused to pay more than £15. In answer to his inquiry whether he can recover the difference between the sum bargained for and the amount paid for piloting the vessel from Dover to Scotland, the Editor of the *Shipping and Mercantile Gazette* states that if he can substantiate his claim, he may sue the owner of the vessel in the county court for the balance unpaid under the verbal contract.

SALE OF SHIP.—WAGES.—Where a small vessel was sold by a timber merchant, to recover a debt due to him for timber, and the captain, who was owner of the vessel, omitted to pay the mate £4 15s., being balance of wages, the Editor of the *Shipping and Mercantile Gazette* considers that the master and late owner should have paid the wages, but that the mate has still his claim upon the ship for the amount of his wagesun paid.

BOARD OF TRADE INQUIRIES AT HOME.

1. *Queen of the Thames*, of London, stranded near the Cape of Good Hope, 18th March, 1871. Inquiry ordered June 2nd, 1871. Mandamus granted by the Court of Queen's Bench. Proceedings still pending.

8. *Ino*, of Hull, stranded 27th December, 1871, on the Paternoster Rocks, on the coast of Sweden. Inquiry ordered January 10th, 1872, and held at Hull on the 6th and 7th February, before T. H. Travis, Esq., S.M., with Captain Harris and Commander Tonkin, R.N., as N.A. During thick and foggy weather the master changed his course to avoid the Holmen, whereas he had already passed it. No blame can be attached to compasses or current. Certificate suspended for three months from date of wreck.

9. *Alfredo el Grande*, of Newcastle, stranded three or four miles north of the Agger Canal, on the 18th December, 1871. Inquiry ordered January 18th, 1872, and held at Sunderland on the 26th and 27th January, before W. Nicholson, Esq., J.P., and G. R. Booth, Esq., J.P., with Captains Harris and J. F. Prowse, R.N., N.A. Neglect of lead. Master's certificate suspended for three months.

10. *Vienna*, of Sunderland. Collision with a schooner, name unknown, near the Dudgeon, December 12th, 1871. Inquiry ordered January 19th, 1872, and held at West Hartlepool, on the 18th February,

before Messrs. Young and Robinson, with Captain Harris as N.A. Court was of opinion that it was not a case in which the master's certificate was affected.

11. *Polyxena*, of Liverpool, stranded at Bagenbun Head, on the Irish coast, 12th January. Inquiry ordered January 19th, and held at Liverpool on the 1st and 2nd February, before T. S. Raffles, Esq., S.M., and Capts. Harris and Budd as N.A. Error in shaping course, and in continuing it for so many hours after dark without taking a cast of the lead; having regard to master's excellent character a lenient view of the case taken, and his certificate suspended for three months only.

12. *Cabinet*, of Newcastle, stranded 11th of January, near the Manacles, Cornwall. Inquiry ordered January 25th, and held at South Shields on the 15th February, before Messrs. Glover and James, with Captain Harris and Commander Prowse, R.N., as N.A. Vessel lost through default of master. Certificate suspended for three months.

13. *Hazard*, of Leith, stranded 11th January on Port Eynon Point, South Wales. Inquiry ordered 3rd February, and held at Leith before John Milne, Esq., J.P., and Y. Pentland, Esq., J.P., with Capt. Harris and Com. Forbes, R.N., as N.A. The Court decided that a wrong and dangerous course was steered from Lundy Island to the Mumbles. Certificate suspended for three months.

14. *Hematite*, of Glasgow, stranded on the coast of Finisterre on the 12th January, 1872. Inquiry ordered January 29th, and held at Swansea on the 7th and 8th of February, before N. P. Cameron, Esq., J.P., and H. H. Fisher, Esq., J.P., with Lieut. Elton, R.N., Swansea, as N.A. Vessel run at great speed round a dangerous reef in thick weather, without sufficient use of the lead. Certificate suspended for three months.

15. *Delos*, of Hull, stranded two miles north of Flamborough Head, on the 16th December, 1871. Inquiry ordered 2nd February, 1872, and held at Hull on the 8th, 9th, and 10th February, before T. H. Travis, Esq., S.M., with Captain Harris and Commander Tonkin, R.N., as N.A. Master in default. Certificate suspended for three months.

16. *Magdala*, of Leith, stranded at Boulmer on the 17th January. Inquiry ordered on the 3rd February. Proceedings pending.

17. *Aracaty*, of Grimsby, stranded near Laurvig, Norway, 12th December, 1871. Inquiry ordered 5th February, 1872. Proceedings pending.

18. *Macgregor Laird*, of London, stranded two miles W. by N. $\frac{1}{2}$ N. off N.W. Point Corisco Bay on the 13th December, 1871. Inquiry ordered 9th February, 1872. Proceedings pending.

19. *City of Halifax* stranded in Carnarvon Bay, 13 miles S. of the Menai Straits, 30th January. Inquiry ordered 9th February.

20. *British Prince*, of Liverpool, stranded six miles E. of North Berwick, 8rd February. Inquiry ordered 18th February. Proceedings pending.

21. *Minnesota*, of Scarborough, stranded on the Long Sand, 8rd February. Inquiry ordered 18th February. Proceedings pending.

INQUIRIES ABROAD.

10. *Sydenham*, of Yarmouth, N.S., stranded on Long Island, 20 miles E. of Sandy Hook, 16th December, 1871. Inquiry held at New York, before the Consul-General and the masters of the *Italy* and *City of Baltimore*. Soundings not taken after 10 a.m.; vessel stood in too long to the shore. Certificate suspended for six months.

11. *St. Clair*, of London, broke from her anchors at Port Natal, and stranded, 20th October, 1871. Inquiry held at Durban before H. J. Meller, R.M., G. Rutherford, Collector of Customs, E. P. Lamport, agent for Liverpool underwriters, and Capt. G. H. Forster, R.N. The master and mate were adjudged to be in default, and their certificates were suspended for six months from date of wreck.

12. *Beltana*, of London, stranded on a reef to the southward of Kangaroo Island, 20th August, 1871. Inquiry held by the Port Adelaide Marine Board. Want of knowledge of ship's position, and reckless and gross carelessness as to ordinary precautions when nearing the land, constant state of intoxication of the master, lead not hove, and log-book falsified. Master's certificate suspended for 24 calendar months, and mate's for three months.

13. *Dethi* stranded on Indispensable Reefs, Coral Sea, 14th September, 1871. Inquiry held by Brisbane Marine Board, who found that the wreck was caused by error of chart, and exonerated master of all blame.

ROYAL NAVY AND ROYAL NAVAL RESERVE.

PROMOTIONS.

Rear-Admiral—Henry S. Hillyar, C.B., 1854.

Captains—John P. J. Parry, 1863; Edward F. Lodder, 1863; William E. Liddell, 1863; James W. East, 1863; Russell G. S. Pasley, 1864; Henry L. Holder, 1864; Charles F. Walker, 1864; Richard E. Tracey, 1864; Charles F. Hotham, 1865; Frederick W. Hallows, 1865; John C. Purvis, 1865; Lord Charles T. M. D. Scott, 1865; Robert H.

M. Molyneux, 1865; Hon. Francis L. Wood, 1866; Robert O'B. Fitzroy, 1866; Edward White, 1866; Mortimer H. Rodney, 1856 (*retired*); Henry Bacon, 1856 (*retired*).

Commanders—Astley R. Cooper, 1866; Spencer M. Medley, 1859; Frederick W. Egerton, 1859; Cottrell B. Powell, 1859; Augustus Jacob, 1859; Frederick G. D. Bedford, 1859; Henry J. Carr, 1860; Ralph L. Turton, 1860; Alexander Tupman, 1860; Dashwood G. Tandie, 1860; Frederick S. Vander Meulen, 1860; Henry T. Price, 1860; Hon. Henry H. à Court, 1861; John R. T. Fullerton, 1861; Herbert Dolphin, 1861; Hilary G. Andoe, 1861; Charles L. Oxley, 1861; Hugo L. Pearson, 1868.

Staff-Commander—John H. Tully, 1861.

Lieutenants—Arthur C. M. Coulson, 1866; Allan R. Woodriff, 1867; Somerset J. Johnstone, 1867; William E. Black, 1867; Edward P. Hocker, 1867; George N. A. Pollard, 1867; Charles Campbell, 1867; George Izat, 1867; Claude H. Millet, 1867; Frederick Arthur Blackett, 1867; Ernest N. Rolfe, 1867; Charles Q. G. Craufurd, 1867; Frederick H. Johnston, 1867; Charles J. Norcock, 1867; Henry P. T. Skinner, 1867; Frederic V. Isaac, 1867; Edward G. Elwes, 1867; Edward G. Deedes, 1867; Richard C. T. Blunt, 1867; Charles K. Hope, 1867; Philip S. W. Mayow, 1867; William Farr, 1867; Stephen A. Olney, 1867; Marmaduke Langdale Kelham, 1867; Reginald G. Drew, 1867; Walter P. Acton Ogle, 1867; Alvin C. Corry, 1868; William L. Morrison, 1867; James H. T. Chowne, 1867; Malcolm H. Drummond, 1867; Frederick L. Partridge, 1867; John L. Burr, 1867; Howard F. Hay, 1867; Sydney S. H. Dickens, 1867; Francis Chalmer, 1867; Edward P. Statham, 1867; Francis H. N. Harvey, 1867; Wadham N. Diggle, 1867; Mountjoy Squire, 1867; Alfred Pigott, 1867; Murray Gladstone, 1867; Henry B. B. Beresford, 1867; John Giles, 1867; Alexander M. Gardiner, 1867; James B. Young, 1867; William F. Carslake, 1867; Edmund B. Wallace, 1867; Harry N. Lowe, 1867; Douglas, M. Forsyth, 1867; Chester Jones, 1868; Francis Powell, 1867; Henry Sandford, 1871; John M. McQuhae, 1867; Eustace F. Grove, 1867; Henry K. Gregson, 1867; Charles E. W. H. Hutton, 1867.

Staff-Surgeons—George V. McDonogh, M.D., 1860; William Crawford, 1856.

APPOINTMENTS.

Admirals—Sir George Rodney Mundy, K.C.B., to Portsmouth.

Rear-Admiral—Arthur Cumming, C.B., to East Indies, vice Rear-Admiral Cockburn, deceased.

Commodore—Richard W. Courtenay, 1859, to Pembroke, vice Armytage, deceased; Algernon De Horsey, 1857, to Port Royal, Jamaica.

Captains—Hon. Maurice H. Nelson, 1866, to *Druid*; Benjamin S. Pickard, 1868, to *Aurora*.

Commanders—Richard D. King, 1867, to *Hector*, for Coast Guard; John S. Stokes, 1869, to *Indus*; George D. Morant, 1866, to *Cockatrice*; Frederick A. Sargeant, 1871, to *Aurora*; Henry Hand, 1867, to *St. Vincent*; John F. Lenox, 1868, to Coast Guard; Robert B. Cay, 1866, to *Vulture*.

Staff-Commanders—Daniel J. May, 1868, to *Lord Clyde*.

Lieutenants—Herbert W. S. Gibson, 1867, to *Excellent*; Henry C. Walker, 1864, to *St. Vincent*; Henry Rose, 1864; Wallace B. McHardy, 1865; Edward S. Evans, 1866; Angus McLeod, 1868; Matthew W. Abbott, 1869, and John E. F. King, 1870, to *Aurora*; Philip T. Richards, 1867, and George H. Moore, 1870, to *Druid*; William E. Fitzgerald, 1861, to *Boxer*; Hon. Francis G. Crofton, 1859, to *Pigeon*; Seymour S. Smith, 1861, to *Salamis*; Henry T. Clanchy, 1861, to *Cockchafer*; Edmund G. Bourke, 1864, to *Druid*; Arthur St. J. Leacock, 1870, to *Tamar*; Robert S. Hunt, 1860, to *Ganges*; Thomas S. Dickenson, 1860, to *Resistance*; Andrew Ross, 1867, to *Duke of Wellington*; Francis H. Keyser, 1866, to *Pembroke*; Charles S. Shuckburgh, to *Mersey*; George E. Price, 1862, to *Mersey*; Lawrence P. Willan, 1865, to *Research*; Vernon Cameron, 1865, to *Druid*; Pearson C. Johnstone, 1865, to *Implacable* for *Sealark*; Francis H. Chapman, 1866, to *Minotaur*; Richard Evans, 1861, to *St. Vincent* for *Martin*; William C. Haynes, 1870, to *Zealous*; Hon. Edward T. Needham, 1870, to *Agincourt*; Frederic Walter, 1863, to *Hotspur*; William H. Jocelyn, 1865, to *Scylla*; Charles J. Hives, 1866, to *Royal Adelaide*; Joseph Swan, 1868, to *Zebra*; Malcolm H. Drummond, 1872, to *Volage*; Alfred Pigott, 1872; Sydney S. H. Dickins, 1872; John Giles, 1872; and Alexander M. Gardiner, 1872, to *Inconstant*.

Navigating Lieutenants—William E. Scriven, 1869, to *Druid*; William P. Haynes, 1866, to *Aurora*.

Sub-Lieutenants—James R. Broadley, Richard W. O. Voysey, John P. P. Coote, Frank J. Grassie, Francis H. Davies, Joseph E. Gregory, Gerard J. Capes, Robert K. M'Alpine, and Martin F. Luther to *Aurora*; Frank W. Henderson, to *Vulture*; Ronald R. M. Hall and William H. Coombs, to *Vigilant*; Archibald E. C. Kennedy and Augustus H. Coker to *Druid*; William C. H. Snell to *Aurora*; Edward J. Fellowes, to *Duke of Wellington*.

Navigating Sub-Lieutenants.—Michael S. Raymond, to *Buzzard*; Thomas C. Pascoe, to *Vulture*; William Tooker, to *Druid*; William H. Meade, to *Aurora*.

Midshipmen.—Henry A. S. Stanhope, to *Minotaur*; Richard H. F. M. Wilson, to *Rattlesnake*; Henry S. Lake, to *Trafalgar*; William G. Ray-

mond, to *Druid*; Frederick R. Gransmore, Henry E. Kellett, Oliver A. Stokes, John S. Clarke, George S. Spencer, Stephen S. Gray, and Edward Powell, to *Lord Warden*, for disposal; Arthur T. Stewart, Edward W. Lloyd, Frederic H. P. W. Freeman, Francis W. Biddulph, James W. Coombe, William Hewetson, George C. Frederick, and Archibald T. Carter, to *Minotaur*, for disposal; James de V. Allen, to *Druid*; Robert L. G. Noel, Francis O. Passey, Alan B. Leslie, and Charles E. Gladstone, to *Druid*; James A. P. Robeson, to *Lord Clyde*.

Navigating Midshipmen—Charles G. S. Eccles, to *Druid*.

Chief Engineers—John P. Allen, 1864, to *Aurora*.

Engineers—Thomas Baldwin, 1864, and William H. Moon, 1868, to *Aurora*.

First Class Assistant Engineers—James Russell, 1871, to *Aurora*.

Staff-Surgeons—William E. O'Brien, 1871, to *Ganges*.

Surgeons—Armstone Duckett Clarke, M.D., 1859, to *Aurora*; Robert Edwards, 1863, to *Druid*.

Assistant Surgeons—Henry C. Woods, 1863, to *Pembroke*; John C. Bailey, 1868, to *Ganges*; Thomas Power, 1872, to *Druid*; Charles G. Wadsworth, 1866, to *Penelope*; Thomas Warden, M.D., 1860, and Matthew Read, 1871, to *Aurora*; Charles McConaghy, 1867, to *Vulture*; Robert G. M'Calman, 1870, to *Pembroke*.

The following gentlemen, having passed the requisite examinations, have received commissions:—F. A. Nixon, J. H. Anderson, C. P. D. Chittenden, C. Davidson, W. B. Drew, W. H. Elmes, C. E. Gray, C. Feltham, W. R. White, R. G. Brown, J. McCarthy, W. G. Sandys, G. J. Gray, H. M. Levinge, R. W. Brereton, J. Simms, and J. Donovan.

Paymasters—George F. Norman, 1860, to *Aurora*; Thomas Winterbottom, 1868, to *Druid*; Joseph Bright, 1868, to *Druid*.

Assistant-Paymasters—Clarence Aylen, 1861, to *Buzzard*; Alfred P. Freeman, 1863, to *Vulture*, "in charge;" Donald A. L. McAlpin, 1870, to *Repulse*; Richard G. Chandler, 1863, and William A. Stevens, 1865, to *Aurora*; William M. Murley, 1864, to *Sultan*; George Finlay, 1870, to *Druid*.

RETIREMENTS.

Captains—Arthur Wilmshurst, 1861; Hugh M. Elliot, 1865.

Lieutenants—Archibald Little, 1866, as Commander; John A. Chalice, 1867; Philip H. Worgan, 1866, as Commander.

Chief Engineer—Thomas Owen, 1852; Adam Dunn, 1855; Frederick Bush, 1871.

Chaplain and Naval Instructor—Rev. George Jackson, 1838; Rev. William G. Tucker, 1836.

Paymaster—James W. Ozzard, 1845; George Grant, 1850.

Assistant Paymaster—Leicester H. Edwards, 1864.

DEATHS.

Admirals—Robert Gambier, 1862; Rear-Admiral James Horsford Cockburn, 1866.

Captain—Edward L. Phillips, 1866 (*retired*).

Commanders—John Tulloh, 1868 (*retired*); Henry Pengelly, 1866 (*retired*); Charles Parker, 1864 (*retired*); Robert Andrew Hughes, 1862 (*retired*).

Paymaster—Thomas Cox, 1808 (*retired*).

CONSULAR AND OTHER APPOINTMENTS.

The Queen has been pleased to make the following Consular appointments:—For the King of Portugal and the Algarves, Mr. Joao Joaquim dos Remedios, Consul-General at Hong-Kong, and Mr. Agostinlio Guilherme Romano as Vice-Consul. For the United States of Columbia, Mr. Rafael Numez as Consul at Liverpool. For the King of Sweden and Norway, Mr. William Wedderburn Arbuthnot as Consul at Madras. For the Republic of Chile, Don Guillerme R. Cruickshank as Consul at Glasgow. For the Republic of Guatemala, Don Juan E. Mutrie as Consul at Belize. For the French Republic, M. Louis Francois Sentis as Consul-General at Calcutta, and M. Gabriel Simon as Consul at Sydney. For His Majesty the King of the Hellenes, Mr. Andrew Duncan as Vice-Consul at Southampton.

To be Her Majesty's Chargé d'Affaires to the King of Bavaria, Robert Burnett David Morier, Esq., C.B.

On the 5th February, at the Court at Osborne House, Isle of Wight, Her Majesty being present in Council, Sir James Weir Hogg, Bart., and William Odo Russell, Esq., were sworn Privy Councillors.

The appointment of Naval Accountant at Yokahama has been given to Mr. Edward Robinson, Assistant Paymaster of the Store and Victualling Department there.

REWARDS GRANTED BY THE BOARD OF TRADE.

To Captain Fred. M. Lambert, of the American ship *Liverpool*, of New York, a gold watch for having rescued the master and crew of the ship *Europa*, of Liverpool (26 all told), on the 23rd December, 1871, and for having landed them at New York on the 2nd January, the captain declining to accept repayment of the expenses he had incurred on their behalf.

To Captain Niels Christian Nielson, of Norwegian ship *Norskflag*, a gold watch for rescuing the survivors of the crew of the barque *Lord Stanley*, of Beaumaris, on the 18th September, 1871, and for landing them free of all charges at New York on the 25th October, 1871.

To Captain David P. Berry, of the American ship *Amelia*, of New York, a binocular glass, for rescuing the crew (14 in all), of the barque *Danish Princess*, of Newcastle, from their sinking vessel on the 9th December, 1871, and for landing them at New York.

GENERAL.

NIGHT SIGNALS.—In the *Shipping Gazette* is a letter from Captain Doty, who is well known as an inventor of a signal apparatus for ships at night. The gallant captain is possessed of a strong sense of justice, for he throws his own system of flashes aside in favour of Sir William Mitchell's simple system of white, red, and green lights, to which we referred last month. Captain Colomb's flashing signals are in use in the royal navy, but they are complicated and very expensive, and require experts to use them, whereas, the system of white, red, and green lights can be learnt in ten minutes and worked by a cabin boy. We hope that the fact that Captain Colomb's signals are used in the Royal Navy, will not be allowed to prevent the adoption of the more simple, more effective and less expensive system, in the merchant service.

A STARBOARD LIGHT FOR SHIPS.—[The Board of Trade have requested us to publish the following statement.—*Ed. N. M.*].—Mr. David Winstanley, of Manchester, whose name has already been brought before the public in connection with experiments made by him with artificial light of various kinds as applied to photography, has communicated to the Board of Trade his opinion that any attempt to obtain a green light uniformly visible over an arc of ten points of the compass at the distance of two miles, by passing the light of an oil lamp through a green medium, would be an attempt in the wrong direction, and he has come to the conclusion that a green light and not a white light behind a green medium is the thing required. The result of his experiments has, he says, tended to show that a green flame visible over the whole circle without reflector or condensor for a distance of four miles may be produced by the suspension of a wire gauze receptacle, filled well with chloride of copper, in the upper part of a good flame produced by the combustion of methylated spirit. Mr. Winstanley adds that the cost of

the flame is within reasonable bounds. Professor Abel, to whom the Board of Trade have referred Mr. Winstanley's communication, reports in substance that although the production of a green light in a lamp, through the agency of a copper compound, is not new to scientific men, he believes that such a light has not been hitherto applied to practical purposes, and he thinks that this might possibly be done in the manner suggested by Mr. Winstanley.

AN EARNEST APPEAL.—Owing to combined action on the part of certain Dock authorities in London, the Local Marine Board, the police, and the Board of Trade, the income of certain officials is about to be materially reduced, in fact, reduced, according to some statements, by 75 per cent. The officials affected are, it is alleged (we don't know with what truth), consequently about to make an earnest appeal for a grant out of the Mercantile Marine Fund. Our readers will, we apprehend, not think it likely that such a grant will be made, when we acquaint them that the officials we refer to are certain door or gate-keepers at some of the docks, who receive fees for the admission of persons into the dock premises. The fees we refer to are not contained in any schedule of rates that we have yet seen. The fee is not paid on entrance, but on exit, and has been at the nearly uniform rate of 1s. 6d. for every seaman taken out of a homeward-bound ship by the person (hammock-snatcher or crimp) admitted. The hammock-snatcher informs the seaman that the payment is all right. Thus, if a hammock-snatcher gets three seamen into his clutches he pays 4s. 6d. and so on, at the rate of 1s. 6d. per victim. He obtains repayment from the seaman afterwards. The grounds on which the officials we have referred to urge their claim on the Mercantile Marine Fund is said to be that as the 1s. 6d. per man is now a charge on the seaman's wages, it is only fair that if the Board of Trade interfere and abolish the impost, and so reduce the incomes of certain persons, the shipping interest should make up the deficiency in some other way. We cannot vouch for the absolute truth of all the above statement, but we do know (1) that many Dock gate-keepers are regularly bribed, and are in collusion with crimps; (2) that the thriving business of "crimp" in London and Gravesend will shortly receive its death blow; and (3) that an application for assistance from the Mercantile Marine Fund by crimps and gate-keepers is as reasonable as many that have been lately made.

THE WARSPITE TRAINING-SHIP.—At the annual Court of Governors of the Marine Society it was stated that during the past year the operations of the Society have been as follows:—Boys on board the ship, 1st January, 1871, 166; received during the year, 368; total, 534. Of these 142 were sent into the Royal Navy; 183 into the Merchant Service; there remained on board 31st December, 1871, 181. From the year 1756 to

the close of the war, 1763, 5,174 boys were sent into her Majesty's ships and the Merchant Service. From May, 1769, to December 31, 1871, 26,496 were sent into the Royal Navy; 3,760 into the Indian Navy; and 21,529 into the Merchant Service and Fisheries. The total number of boys sent out is 56,959. In her Majesty's ship *Ganges* 17 prizes and good conduct badges had been distributed among 24 of the Society's boys, and similarly good accounts have been received from the Commanders of other ships. The income will be diminished by the loss of the annual subscription of £100 granted from the India Board, which the Secretary for India states will henceforth be discontinued. We are sorry for this, but doubtless private charity and judicious grants from the Mercantile Marine Fund, will still keep this national institution afloat.

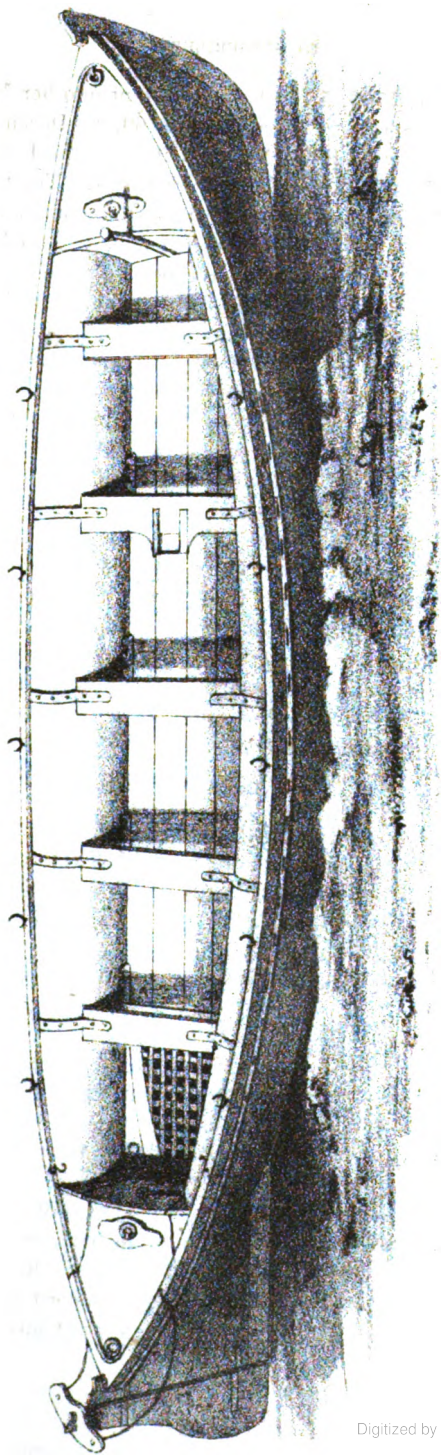
ROCKET APPARATUS AND LIFE BOATS IN THE BOSPHORUS.—Some three three years ago the Board of Trade were applied to by MUSURUS BEY to assist in establishing rockets and lifeboats in Turkey. They supplied the rocket apparatus out of Board of Trade stores, and applied to the Admiralty for instructors. We are happy to find, from the *Times* correspondent, that this almost faultless rocket apparatus and the lifeboats on the model of those of our *Royal National Life Boat Institution*, are doing noble work. It appears that Samuel Palmer, an English Coastguard-man, has not only instructed his crews, but has infused into the men the same spirit and zeal which animate himself. At one particular time there were ten vessels ashore, nine of which became total wrecks; but no fewer than sixty-one lives of the crews were saved by the rocket apparatus and boats. Many an act of daring gallantry was performed during the awful gales. The plan of having refuge houses all along the coast supplied with soup, tea, clothing, and other necessaries has proved to be most valuable. On the Asiatic side, under the management of John Doyle—another of our nominees, and a capital specimen of a British seaman—about sixty lives and several valuable ships have been rescued during the last three years.

NOTICE TO SUBSCRIBERS.

1. The January number for 1872 is being reprinted. Those subscribers who wish to obtain a copy to make the volume perfect will oblige by notifying their wish to agents or the Editor, if they have not already done so.—2. All communications in future are to be addressed to the Editor, at 15, Great Queen Street, London.

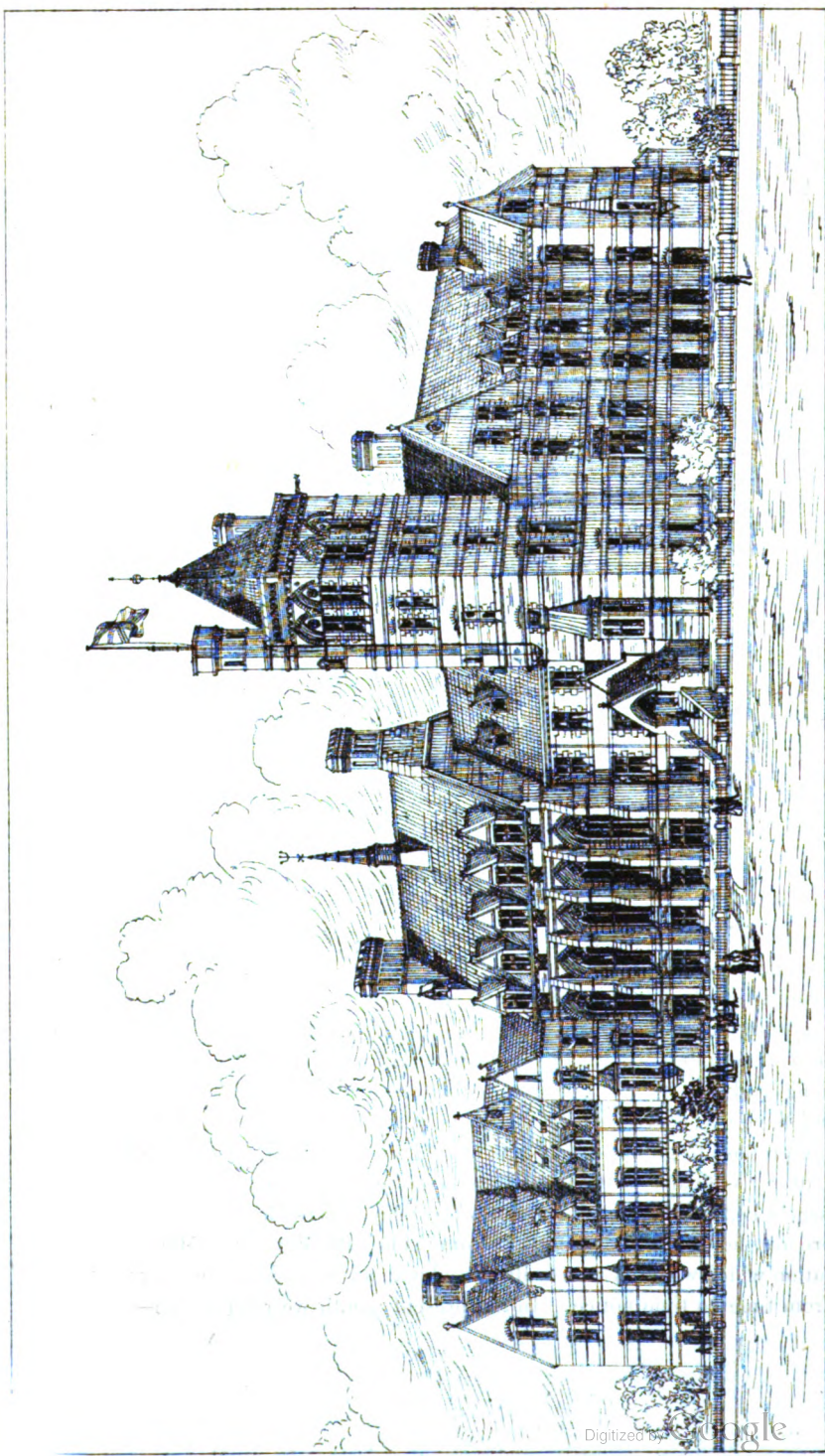
ANSWER TO PROBLEMS OF NAUTICAL INTEREST.—We have received the following correct answers to the first question, viz., “ $7\frac{1}{2}$ minutes,” from J. G. Boulton, Southsea; J. Jones, Booth, and R. Strachan, Westminster. We have received twenty-seven incorrect answers. To the second question we have received but one correct answer, viz., “They will collide.”—ED.

N^o 4
LAMB & WHITES PATENT



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AS BUILT FOR

H. M. YACHT VICTORIA & ALBERT, THE PENINSULAR & ORIENTAL
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The Waverley Summer Orphan Institution.

THE
NAUTICAL MAGAZINE.

NEW SERIES.

APRIL, 1872.

MERCANTILE MARINE LEGISLATION.

No MENTION of Mercantile Marine Legislation is to be found in the Queen's speech, nor has the President of the Board of Trade given notice of his intention to re-introduce the Merchant Shipping Code Bill. Bearing in mind these important omissions, and bearing in mind also that Ballot, Railway Amalgamation, Army Reform, and other important measures, of which there are evident signs, must occupy the attention of her Majesty's Ministers, we think we are not wrong in assuming that our Merchant Shipping Laws will remain unamended and unconsolidated for another year. The year 1872 will doubtless be of some interest to us, for we shall in all probability see the total abolition of Compulsory Pilotage, and, let us venture to hope, possibly a consolidation of the departments having control over lights, buoys, beacons, and pilots. If these two important reformations are brought about it cannot be said that the session will be unimportant to us. As regards Compulsory Pilotage, we have long held that its abolition is called for; and, after the report of last year, we have no misgivings that it will be completely effected. We do not now propose to go into the merits of the question at all, as we regard the matter as finally settled, and as awaiting only Mr. Chichester Fortescue's Bill to effect what all but a few shipowners desire.

There are, however, some points in connexion with Mercantile Marine Legislation which we think may be discussed with advantage, and these we shall from time to time notice. In the present month we refer to one—

viz., the Rule of the Road at Sea; and discuss another—viz., the training of British seamen for British ships. The mention of the first demands an apology; the discussion of the second is of the utmost importance.

As regards the Rule of the Road, a gentleman known for his connexion with brewing, banking, and electioneering, has made himself busy; and a gallant admiral, a member of the House of Commons, has prepared a series of alterations. We have, with the utmost patience, read all that both have written on the subject, and we write advisedly when we refer to their proposals as alterations and not amendments. We have in our favour, when we entirely disapprove of the proposed alterations of the Rules, the unanimous approval of our steamship owners, and of all really practical men in command of our merchant ships: and we know further, from answers in Parliament and a perusal of the papers, that the proposer, himself, when in office, was one of the Board of Admiralty who opposed any alteration in the existing rules. Our readers may wonder why we even refer to rules that we say admit of no discussion; our answer is, that we do not intend to discuss the rules, for they are settled we hope, once and for all. Why we refer to the matter is to consider a very small point, but yet one that is sometimes magnified into one of vital importance. This small point, and the only one in connexion with the subject we intend to mention, is the proposal that a ship when being overtaken by another ship, shall be *required* to wave a light astern. We deprecate all attempts to make a hard and fast rule of this sort. It would, in its absurdity, be equal to requiring a man to have eyes in the back of his head as well as in the front. A steamer overtaking a sailing ship can always keep out of her way; but the sailing ship overtaken cannot keep out of the way of the steamer. The present rule is simple and intelligible. It requires one ship A, overtaking another ship B, to keep out of the way of B, and it further provides that B shall keep her course. We cannot conceive anything more reasonable than this. A person, a vehicle, a ship, coming up behind and overtaking another, shall "keep out of the way." Here is a simple, plain, intelligible proposition. There is no division of responsibility—the overtaker must keep out of the way of the overtaken. That is to say, a fast steamer overtaking a slow steamer or a sailing ship, shall not run her down; and if the overtaker does run into the overtaken, then the overtaker is responsible.

Ships always keep a look out when properly navigated, and look-out men are always stationed forward. As against this, the proposal that every

ship shall be required, under a penalty, to wave a light aft, assumes two things—viz., (1) that the ship coming up astern has, unless a light is waved, no means of seeing the ship before her; and (2) that sailing ships should keep a special look out for steamers about to overtake them from behind; and it assumes (3), further, that, without some such enactment, a light cannot be temporarily shown aft in emergency. To all of these we demur. In the first place, no ship has a right to run a headlong course, and run down a vessel before her. If she does so, she must either be going at too great a speed in dark weather, or must have a very bad look out forward. It is the duty of a fast ship to see that she does not run a slow ship down, and not the duty of the slow ship to keep the fast ship off. In the second place, to require sailing ships to keep a special look out aft, in order to show a light to steamers behind them, would be to remove the responsibility from the vessel which overtakes another and runs her down; and would throw it upon the helpless vessel run down. In the third place, there is nothing whatever in the existing rules to prevent a sailing ship from showing a light or firing a gun, or blowing a horn or whistle, or ringing a bell, or shouting, or doing anything else to attract the attention of a ship coming up astern in a dangerous and reckless manner. And here we wish to make a broad distinction between the compulsory and optional showing of a light or making a noise. If it were compulsory and were omitted, the blame for collision would not rest on the vessel running the other down—that is to say, on the only one able to keep out of the way—but would rest on the vessel that had been run down, and could not get out of the way.

In connexion with this subject we would call the attention of our readers to Article 20 of the Regulations, which provides that nothing in the rules “shall exonerate any ship, or the owner, master, or crew thereof from the consequences of any neglect to keep a proper look out, or of the neglect of any precaution which may be required by the ordinary practice of seamen, or by the *special circumstances of the case.*” Under this rule a sailing ship would be justified in taking any necessary steps to call to herself the attention of a steamer overtaking her at night.

The second point we propose to consider this month is the training of boys for the British merchant service. If one assertion is more frequently and confidently made by British shipowners than another, it is that British seamen, as a body, are not what they ought to be, or what they were, either as regards competency or character. Those who make this assertion enforce their views by attempting to show why the deterioration they lament has come about. The causes alleged are—(1) the

abolition of the Compulsory Apprenticeship Law ; (2) the increase of steam ships ; (3) the absence of any statutory definition of the status and qualifications of an A.B. ; (4) the uncontrolled admission of foreign seamen into the British mercantile marine ; (5) the absence of anything like concerted measures on the part of the Government to secure the training of British boys for the sea. There can be no doubt whatever that (2) the increase of steamships has reduced, and will continue to reduce, the number of boys in training on board ships at sea. Steam ships use sailors, but do not make them ; but we do not suppose that anyone will be mad enough to propose that the increase in the number of steamers should be checked by legislation. We must accept the fact as we find it, and if boys are to be trained for the sea they must be trained in sailing ships. As regards (3), a proposal has been made and urged that no man shall be entitled to the rating or pay of an A.B. who cannot produce certificates of at least four years' service at sea. Now, as regards this proposal, we know that many useless and bad fellows go to sea for a year or so, and then ship as A.B.'s ; we know that the safety of a ship and all on board is often jeopardised by this, and that these incompetent men throw an undue amount of work on every one else ; but we fear that if a statute were to require that the rating and pay of A.B. should depend on proof of service, that the very fact of a useless man having performed the period of service required, would embarrass the owner and master if they attempted to dispute his claims or to disrate him : and we fear there would soon be a strike for higher wages amongst certified A.B.'s. There is also another point—viz., that at the present moment a master can insist on the production of the certificates of discharge of men he is engaging, and can decline to accept any seaman who does not produce these certificates. The fact that this is scarcely ever insisted on is strong presumptive evidence that any statutory enactment as to the production of certificates of service by seamen would be a dead letter. There is, however, a good deal in the proposal, and we trust that some of our practical business men will work it out ; but we hope they will not lose sight of the fact that no department of the State can undertake to issue 800,000 of these certificates without an enormous expenditure of public money. As regards (4), the admission of foreign seamen into British merchant ships, we find that although some shipowners look on their presence as an evil, the great majority say that foreigners, especially Danes, Swedes, Norwegians, and Germans, are as good as many Englishmen on board ship : and, indeed, are infinitely better, more docile, more trustworthy, and more competent than untrained boys and than many of the long-shore fellows who ship as seamen from our seaport

towns. As regards (1) the compulsory system of apprenticeship over the abolition of which so many persons express regret, we can only say that in our opinion that system as it existed was a gigantic sham, and that it was especially the means of introducing into our mercantile marine thousands of worthless and useless lads as parish and pauper apprentices. We cannot hope for the re-introduction of the system, for we believe that it would not effect what we all desire. It would be useless to require steam ships to carry apprentices: and if the compulsory law were re-introduced, it would bear heavily on sailing ships, and a difficult question would arise how the burthen on sailing ships should be met.

We now come to the last point—viz., the absence of any comprehensive plan for training boys for the merchant service; and here we open a large subject.

Let us suppose that the tailors, or the carpenters, or the hair dressers, or the cooks of England were to complain that foreigners muster strongly in their ranks; that apprenticeships are few and decreasing; and that it is necessary that the State should aid in apprenticing British boys to these time-honoured professions. The Chancellor of the Exchequer would undoubtedly turn a deaf ear to their appeals—and he would be right. So also would he be right to refuse British shipowners who ask the State to train boys to help them to work their ships. So long as a coat fits well, or our hair is cut well, or our dinner is cooked well, it is of no importance to us whether the tailor, the hair-cutter, or the cook is or is not an Englishman; all we care about is that any men who are not good workmen, are not employed to do our work; and so as long as our ships are navigated cheaply and in safety, and our merchandise and our food are carried punctually and undamaged, it is of no moment to us whether the carriers are Englishmen or foreigners. As a matter of fact, the nation is best served in this, as in all other respects, by workmen, whether British or foreign, who are reasonable in their demands for wages, and are intelligent and competent to perform their work. The selection of foreign seamen to man British ships does not, as a commercial question, rest with the nation, but with the employer of the seaman, the shipowner; and he voluntarily takes foreigners, and when he does so, he voluntarily takes them in preference to English men or English boys, because he finds either that they are to be had more readily, or that on the whole they answer his purpose better. To deny a shipowner the privilege of going into the labour market and selecting his workmen, where and how he will, to say that he shall not avail himself of the services of a skilled foreigner, would be to perpetrate a gross injustice.

It is not until we come to something utterly beyond the mere labour question—the mere commercial aspect of the case—that the proposal to make an effort to train British boys for British ships, becomes tenable by the British taxpayer. If we are to have British boys for British ships, we must pay for it. The whole question, go round it or discuss it how we will, resolves itself into one of money. For money it can be done—without money it is impossible. The question is two-fold. First, limited, as affecting British shipowners as employers; and, secondly, political, as affecting the nation at large. As regards the shipowners, we shall never believe that they, as a class, desire the training of British boys unless and until they come forward and say as a class we will find the requisite money. When the members of our seaport towns come forward boldly and say, we want British boys for British ships, and we consent to and demand the taxing of British ships to pay for training them, they will be really in earnest. No such demand, and no such proposal have yet been made by the Shipping Interest as a body. As yet we must, therefore, assume that, as mere conveyers of goods to our customers abroad and as conveyers of goods to ourselves at home, shipowners find the employment of foreigners to be advantageous.

As regards the political aspect, we have shown in our number for March last year, that we are dependent on our mercantile marine for two things—one, our supply of food at all times; two, the manning of our ships of war in any sudden emergency. Although, therefore, as sellers of manufactured goods, and as eaters of beef, and mutton, and grain, it is absolutely of no importance to us whether the carriers of goods and food are, or are not, foreigners, so long as they will and can do the carrying for us, still, as a nation, it is of vital importance to us that we should be able, under all circumstances, to keep up our supplies and to man our fleets.

We cannot too strongly insist on the division of this subject into two distinct heads. 1. The purely commercial; and, 2, the political. We leave the commercial alone until the commercial interests give signs that they are in earnest in the matter. Then we think we can help them. As regards the political aspect, all we have to say is this, that so long as the responsible advisers of the Crown do not think it necessary or desirable to make use of the fishermen and many other English sailors now in our mercantile marine for purposes of our reserves, and so long as they do not think it necessary or desirable to carry into effect the recommendation of Mr. Cardwell's Commission, or to devise any other systematic plan for training British boys for British mercantile ships with a view to State necessities, nothing can be done. If her Majesty's Government think the matter of

importance it will be done: and they are the best and only competent judges of the subject.

In our above necessarily incomplete remarks, we have not included any reference to the existing training and reformatory ships for boys, for although the ships are noble evidences of kindly feeling and practical Christianity, and effect an infinity of good in rescuing boys from our streets: and although they do provide some trained boys for the merchant service, they are not what we ought to rely on for State purposes. They can be improved and may some day form a starting point, and we wish them every success and hope that they will go on and find the necessary support to enable them to keep boys until they are well grown; but what we want for the British mercantile marine, when we do begin to train boys in earnest, is an effective organization, which will supply our ship-owners with fine, strong, trained, country boys of good character, of from 16 to 17 years of age, boys who will be able to take their proper places on board ship, who will be worth ordinary seaman's wages, who will make the name of the British sailor respected abroad, and who, should the State desire their services and pay for them, may form a third class naval reserve.

THE BRITISH CONSTITUTION AND GOVERNMENT.

PART I.

HOW THE LAWS OF ENGLAND ARE MADE.

CHAPTER I.—INTRODUCTORY.

WHEN we speak of the Constitution of a country, we mean the manner in which it is governed, or, in other words, the machinery by which its laws are made and administered. Very small communities of people have no Constitution or form of Government, and if every member of those communities followed the golden rule of "Do unto others as you would be done by," they would never need one, and might live quite happily without laws. But differences arise even between members of the same family, and disputes are unhappily frequent among persons who are strangers to each other. As communities grow in size, differences

between individuals increase in magnitude, and it is necessary that laws should be made for settling them. Wrong, too, is done by one member of a community against another, and it is necessary that this wrong should be redressed by punishing the wrongdoer, and, if possible, by compensating him to whom wrong has been done. The method of making laws for these purposes, varies very much in different countries. Among the uncivilized, each member of the community protects himself and his goods by the strength of his arms, or else the Chief of the tribe decides all disputes without anything to guide him but his own will. But as civilization spreads, or the community becomes larger, certain customs grow up among the people for the settlement of differences and the punishment of wrongdoers. These are called *lex non scripta*, or unwritten law, by which a King or Chief deems it prudent to be guided for fear of injury to himself. As a community becomes still more civilized, or grows still larger, these customs become more numerous and more clearly understood; and, in time, formal laws are made for the guidance of the people in their dealings with one another and for the management of public affairs. If these laws are made by a Chief or King, without the concurrence of any Council or Parliament, and are administered in the same way, they are called decrees; the King or Chief is said to have unlimited power over his subjects; and the Government of the country is said to be a despotism or an unlimited monarchy. We read in histories, even of modern times, of countries, of very great size and inhabited by several millions of people, being governed by a Sovereign with unlimited power; and history shows that during some period almost all countries have been governed in this manner.

But unlimited monarchies, or despotic forms of Government, generally bear harshly upon the people, who, smarting under the injustice done to them, protest against the tyranny, and, as they increase in intelligence, endeavour, by force or persuasion, to acquire some share in the Government. Although these struggles are generally long, and often result in civil war, the people invariably succeed, and when they have succeeded, the Government ceases to be purely despotic, and resolves itself sometimes into a republic and sometimes into a limited monarchy—so called because the power of the Sovereign is limited to some extent by the will of the people. A limited monarchy is also called a constitutional

form of Government. Countries which are ruled by the will of a single man uncontrolled by any Council or Parliament, and influenced by nothing but fear for his own personal safety, are not considered as having any Constitution; and, in proportion as the people have a greater or smaller share in making the laws by which they are governed, their Government is said to be constitutional or unconstitutional.

Thus it will be seen, that a Constitution grows with the growth of a community, just as habits grow in an individual, that is unconsciously or without design. And as good habits may be, and should be, encouraged, and bad habits checked and destroyed, so the good parts of a Constitution should be guarded with great care by a people, and what is defective or bad in it should be done away with. The British Constitution has grown in this way. It is the growth of many years, and the result of many struggles between the people, the nobles, and the Sovereign. It was framed by no single person, and has never been defined by law to this day. But its principles are well understood by those in authority, who dare not depart from them. Thus it has come to be regarded as the most wonderful organisation of its kind, and has served as a model for many other countries.

CHAPTER II.—THE CROWN.

Our laws are made by an agreement on the part of what is commonly known as the Three Estates of the Realm—the Crown, the Lords, and the Commons; that is to say, laws are framed in the House of Lords, and the House of Commons, and are afterwards consented to by the reigning Sovereign. But we should remember that, although it is common to speak of the King, Lords, and Commons as the Three Estates of the Realm, it is an error to do so. The "Three Estates of the Realm" is a very old phrase descriptive of the three classes of the King's subjects, the Clergy, the Nobles, and the Commons; but the Clergy do not now occupy a position in the State as opposed to the Nobles and the Commons, so that the phrase, in its original sense, has very little significance when applied to the condition of the country in the present day, and we may as well agree to accept "The Three Estates" as meaning the Crown, Lords, and Commons.

Now, as the House of Lords and the House of Commons are called into being by the act of the Sovereign, we must first of all understand the reigning monarch's position.

The occupant of the Throne of the United Kingdom of Great Britain and Ireland may be either a man or a woman; and succession to the Throne is hereditary. The Salic law, which prevails in some countries, does not allow a woman to occupy the Throne; but this law which originated among the Salians, whose daughters were excluded even from the inheritance of private estates, is not recognised in England. When it has happened with us, as on more than one occasion, that the King or Queen dies, leaving no heir or no desirable heir, the next successor to the Crown is nominated by Parliament, as representing the people; but in those cases where the successor to the Throne has been nominated by Parliament, the person to whom the Crown has been offered has always been connected by marriage or descent with a former King of England. In former times, the King of England possessed, besides private property, the right to receive for his own use duties of excise, and what are styled in the Hereditary Revenues Act, Casual Revenues, including, among other things, droits or rights of Admiralty, droits of the Crown, West India duties, and surplus revenues of British Possessions abroad; but latterly it has been the custom, at the commencement of every reign, to make an agreement with the new Sovereign, that all these revenues shall be collected by departments of the State, and paid into the National Exchequer or Consolidated Fund; and that the Sovereign should receive out of the Consolidated Fund a fixed sum yearly to meet the expenses of the Royal Household as distinguished from the expenses of public Government. This sum is called the Civil List. At the commencement of the reign of Queen Victoria, the Civil List, settled upon her Majesty, amounted to £385,000 per year. Of this, £60,000 was to go to her Majesty's Privy, or private Purse; £131,260 for the salaries of her Majesty's Household and Retired Allowances; £172,500 for the expenses of her Majesty's household; £13,200 for the Royal Bounty, Choirs and Special Services; and £8,040 for other purposes not specified by the Act, except that her Majesty was empowered by it to grant pensions out of this £8,040, amounting altogether to £1,200 per annum, to persons who had distinguished themselves in some way to the advantage of the country without enriching themselves. These pensions usually amount to £100 each. The Sovereign, however, does not sacrifice any of

the rights of citizenship by this arrangement. We may state, as a general principle, that the Sovereign can hold private property by inheritance or purchase in the same manner and to the same extent as any subject, and, as a matter of fact, does hold property as a private person. This is as it should be, for while it is only right the Sovereign should not appropriate taxes and duties which are levied for the benefit of the country at large neither should she forfeit any of the rights which her meanest subjects possess.

The Sovereign, is regarded in this country rather as the head of the State than as a personal ruler, and is generally spoken of by statesmen and politicians as "The Crown." It will be seen that everything connected with the government of the country is done in the name of the Crown. All officers of State, all judges, and all magistrates act in the name of the Crown; every taxgatherer, every postman, and every telegraph boy is a servant of the Crown. Every criminal or *quasi* criminal act done by one person against another is regarded as an offence against the Crown; all fines are paid to the Crown, and all guilty persons are punished in the name of the Crown. Beside this the Crown maintains an army and navy to defend the country from invasion, to protect the goods of our merchants when upon the sea in time of war, and to protect our fellow-subjects in distant Colonies. The Crown has also the power of declaring war against any foreign power, without asking the permission of Parliament, but it will be shown presently, that although this power is theoretically possessed by the Sovereign alone, it is practically in the hands of the people. It is the custom for the Sovereign, soon after his accession to the Throne, to be publicly crowned, and part of the ceremony of the Coronation is to take an oath to maintain the Constitution.

It is a common saying, that "The King can do no wrong." This does not mean that the King can do no wrong as a man, but that the King, as head of the State, can do no wrong. Some explain this by saying that, inasmuch as the King acts on the advice of his Councillors, it is they who do the wrong, if any is done, and not the King; but this is not correct, for the saying was common before the Ministers of the Sovereign were responsible to Parliament. The true meaning is, that the King is not responsible to anyone for any act he may do as a King, because his official acts are the acts of the State. It is evident that the State can do no wrong, because the State is superior to all persons under its dominion, and no tribunal can be found to try it, unless it be an international tribunal formed of the

representatives of Foreign States for a wrong done by one country against another. Some go further, and say that the King can do no wrong, because there exists no properly constituted body of men by whom he can be tried and punished, if need be, and that if such a body did exist the men composing it would be Chief of the State, and not the King. But, whatever the origin of the maxim, and whatever may be its true meaning as regards the Kings of England in the past, it is certain that it can be applied to the Sovereign of England in the present day only in one sense. It has come to pass that the official acts of the Sovereign of the United Kingdom, are as nearly as possible the exact expression of the will of the people; and if a King does only what his people wish him to do, he certainly cannot be said to wrong them, however unwise those acts may be. But we shall see this more clearly when we come to the chapter on "The Cabinet and the Government."

CHAPTER III.—THE PRIVY COUNCIL.

IN former times, the Sovereign took a far more prominent part in the administration of the law, or, as it is commonly called, "The Executive," than is the case now, and, for his assistance, he gathered about him a number of councillors, who acted as his private advisers, and, in time, came to be known as the Privy Council. A Privy Councillor is nominated by the Sovereign, by whom, also, the appointment may be cancelled, and he is styled the Right Honourable. It is a common error to suppose that all the members of the Government are styled Right Honourable, or that being a member of the Ministry necessarily carries with it this title of distinction. Any natural born subject of the Crown may become a Privy Councillor, and the appointment may last during the life of the Sovereign making the appointment. The oath taken by a Privy Councillor consists of seven articles, as follows: To advise the Sovereign according to the best of his cunning and discretion; to advise for his Sovereign's honour and good of the public, without partiality through affection, love, need, doubt, or dread; to keep the Sovereign's counsel secret; to avoid corruption; to help and strengthen the execution of what shall be then resolved; to withstand all persons who would attempt the contrary; and, in general, to observe, keep, and do all that a good and true Councillor ought to do to his Sovereign Lord. As the number of Privy Councillors, however, was unlimited, and their duties were very general, they proved to be not very useful as a Council for the transaction

of public business. Consequently the custom arose for the Sovereign to choose from among his Privy Councillors some of the more able to form his Cabinet, and the Cabinet now, to a great extent, serves the purpose for which the Privy Council was originally designed. It is easy to be conceived, too, that out of so large a body as the Privy Council, some of the more able or more ambitious would lay their heads together and concert measures among themselves in private, and, having obtained the King's consent to them, would overrule, or at least guide, the decision of the Privy Council at large. The commencement of this practice of the King consulting with his favourite Councillors before any measures of State were submitted to the Privy Council can be traced as far back as the reign of Charles I., and it is out of this practice that what is now regarded as an institution of the country and a most important feature of the Constitution has grown. The Privy Council, however, still discharges many of the most important duties of the State. In dealing with some subjects it is impossible for the Legislature to prescribe in all cases precisely what shall be done; it therefore becomes necessary to give a discretionary power to some authority to issue orders in such cases. The authority chosen is the Sovereign; and the laws referred to provide that Her Majesty may, by Order in Council, direct certain things to be done, and forbid the doing of certain other things. These Orders in Council are made by the Council of Her Majesty's advisers sitting as a Privy Council, and presided over by herself. Theoretically, this Council may be composed of any of the Sovereign's Privy Councillors; but, practically, it always consists of one or more Cabinet Ministers. These Orders in Council are passed, not at the Council Office, in Whitehall, but at such of the Royal residences as the Sovereign may happen to be occupying at the time. They are afterwards published in the *London Gazette*, and in such other manner as the Act of Parliament may direct, bearing the names of the Councillors present on the occasion, and signed by the Clerk to the Council. For instance, when the cattle plague occurred in England, a law was passed empowering Her Majesty, by Order in Council, to make such provisions as may be deemed proper to prevent the importation of diseased cattle from foreign countries. It was found necessary in that case to forbid the landing in England of any cattle coming from certain ports on the Continent, but a little reflection will show that it was impossible to pass a general law upon the subject, because, although to-day cattle might be diseased in Holland, next month they might be sound there, and yet very bad indeed in Roumania. Consequently it was necessary to give a discretionary

power to forbid the importation of cattle from this or that port, as occasion required. In all such cases Her Majesty in Council is selected as the authority to make the necessary orders; so when we hear of Orders in Council about anything, we must understand that those orders are issued by Her Majesty in Council under the authority of an Act of Parliament, which prescribes the circumstances under which the orders shall be made, and to what extent the discretion shall be exercised. We may give another instance. The Legislature places a very high value upon human life, and the whole tendency of our laws is to protect that before any other thing, no matter how costly it may be. In accordance with this principle, a law has been passed making it the interest of all persons to save the lives of shipwrecked British sailors rather than shipwrecked property; and in this law, which is called the British Merchant Shipping Act, it is enacted that if any foreign Government adopts a law similar in principle and effect to it, the Queen may direct, by Order in Council, that the inducements offered to British seamen to save life from British ships, as contained in the British Merchant Shipping Acts, shall apply equally to the foreigners in question, whether sailing within British jurisdiction or not.

(To be continued.)

ANCIENT GALLEYS AND THEIR MODE OF PROPULSION.

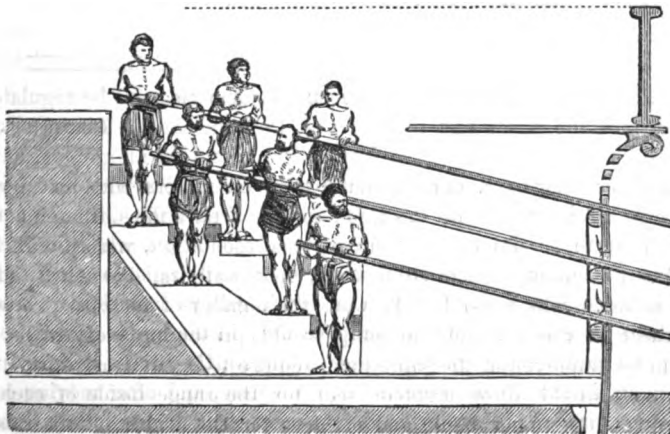
By W. S. LINDSAY.

(Concluded from our March Number.)

BEFORE proceeding to examine in detail how rowers thus arranged could work with effect, it will be desirable to show, that the outline of the vessel, of which a section is here given, corresponds not merely with the imperfect information obtained from ancient authors, but with what would be practically possible. To work the number of men here shown, the breadth of the beam of the galley would, presuming every rower on board to be employed at the same time, require to be, at least, forty-two feet, which would allow eighteen feet for the range inside of each of the oars on the upper bank, and six feet for the width of the raised midship deck, where the hatches were placed. That width would allow for oars fifty-four feet in length, which would be ample where the highest row-port was nine feet above the level of the water; and as thirty

men would be able to work on each oblique row, a hexireme, of no greater width, could carry three hundred and sixty rowers, a septireme four hundred and twenty, an octoreme four hundred and eighty, and so forth. In the case of a tesseracontere, with no greater beam, two thousand four hundred rowers could find employment, but as vessels of that enormous size, if more than the one was ever built, were very considerably wider,*—it would be an improvement on the plan proposed by Mr. Howell, of ten men to each of the four hundred oars, to place fourteen rowers upon each of the oars of the upper bank, twelve on the second, ten on the third, eight on the fourth, and six on the fifth or lowest bank, which would give the required number of four thousand, though, in either case, many of the men would be more ornamental than serviceable. There is, however, no doubt that about three thousand men could be placed so as to row in each individual case with effect if they were apportioned to their oars in somewhat the scale of ten, nine, seven, six, and five, or say, thirty-seven men to each of the forty banks or oblique rows of oars, which would leave one thousand for reliefs.

If the men were arranged in the manner suggested, and as represented in the following front view of their positions when placed at their stations before they commenced work on board of a trireme, the various objections which have been raised to the plan of working oars placed one over the other are removed.



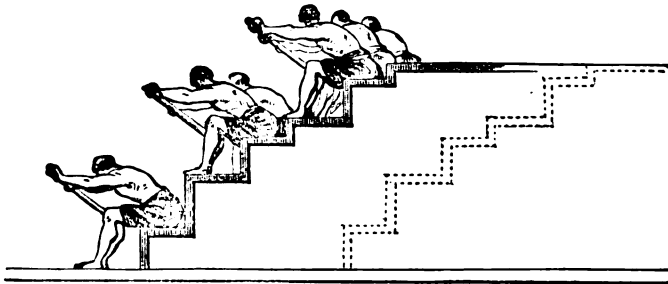
A practised eye will at once perceive that rowers thus arranged could work with great effect and simultaneously, without in any way interfering

* Ptolemy's ship had a beam of 57 feet.

with the movements of each other. Nor would there be any difficulty in placing to advantage, as may be seen in our illustration (Fig. 2 of March number), of the transverse midship section of the quinquereme, so that each might work with effect, the very large number of three hundred rowers on vessels of that class.

If this can be shown, then the problem is solved as to how the various classes of galleys were rowed, for, if the principle of their classification was in accordance with these views, the difficulty does not increase with their dimensions, which is the case in all other theories; the extreme height of the highest bank of rowers, either in the case of the quinquereme, or in that of any of the larger vessels, not requiring to be more than nine feet above the water.

At the word of command from the officer, who walked upon the elevated portion of the deck, and guided by the leading men, who were stationed at the inner end of the oars, the rowers, when seated, stretched the handles of their oars as far aft as their arms would permit, as shown in the following representation:—



The action of rowers would, however, in some measure be regulated by the size of the galley and the space at their disposal. Placed alternately, those who worked at the lower tiers would, in all galleys, have full swing for their oars, as the footstools of the rowers who sat above them would not interfere with the free action of their bodies, though such might appear to be the case by the side representation, which in itself, and without reference to the front view, necessarily fails to show their exact position. But while the men in small galleys rowed from their seats, there is every reason to suppose that in the larger description, where great numbers of rowers were employed, they rose, if seated as they now do, in the Mediterranean and elsewhere, and after moving one or two steps forward, according to the space at their disposal, they threw themselves backward into their seats with an impetus as simultaneous and harmonious as it would be possible to attain without the aid of a machine to regulate their joint action. Indeed, the ancients practised

this art with the greatest care, and the rowers were frequently exercised on benches erected on the shore, and their harmonious movements were sometimes made an object of display in their theatres. In nearly every case they plied their oars to the sound of either vocal or instrumental music, so that a fleet of the larger description of galleys, when under weigh on the smooth waters of the Levan, must have been, as various ancient authors describe, a heart-stirring and magnificent display.

Vossius, Le Roy, and all who have written on the subject of how the rowers were placed at their oars, though they differ less or more from each other, and fail, as we conceive, to propound a theory applicable to vessels of every class, agree in the opinion, that the rowers were divided into classes, and that the *thranites*, who pulled the longest and highest oars and had the greatest amount of labour, were exposed to the darts of the enemy. For these reasons they received, as we learn from Thucydides, the highest pay; and from the same authority we ascertain that even the largest description of galleys "were *not* decked *throughout*."* These statements are important, showing, as they do, a thoroughly organized system amongst the rowers, without which it would have been impossible to make available, in a limited space, large numbers of men, and answering the objections which have been frequently raised, to having so many men at work close together in the hold of a ship. By our illustrations, it will be seen that the galleys are only decked somewhat less than half way across, in midship, a large space remaining open, so that the upper tier of rowers were above the level of the deck, and "exposed to the darts of the enemy," except so far as they, with the soldiers who fought from the sides as well as from those portions of the deck in the bow and stern, which were wholly covered, were protected by the bulwarks. Besides the beams, there were stringers placed fore and aft, constituting gunwales, on which the oars were balanced. The solid framework of the hull does not appear to have extended above the highest bank, and the platforms with the benches on which the rowers sat were either built with the ship or fitted afterwards according to circumstances.

The larger ancient galleys were, so far as we are now competent to form an opinion, divided into compartments, as shown in Fig 2 of February number, and were not unlike the steamers of our own day, verifying the old adage that there is "nothing new under the sun;" and certainly this holds true on comparing the bows of the war galleys of the ancients with the iron-clad rams of modern times. Our theory, therefore, after the most careful inquiry and a close consideration of this question

* Thucydides (Bloomfield), vol. i., chap. xiv., p. 41.

in all its details, is, that *the paddle-wheel steamer of to-day is really and practically in her structure (though materially improved, and possessing the vast advantage of mechanical power) the row galley of the ancients.* Her machinery and coal bunkers are distinct and separate from the hold, cabins, or any other portions of the ship; and the paddles of the steamer, with the engines, take the position and perform the part of the rowers and their oars. Here modern genius and skill, as it has done in a thousand other instances, substitute mechanical for manual labour. The modern paddle, in its revolutions, performs exactly the same duty as the oars of the ancients in their simultaneous movements, and the well-trained crews of the Grecian and Roman galleys in their action at the oars, were, so far as is traceable, almost as regular as the beat of the paddle-wheel.

Nor was it necessary to appropriate for the use of the rowers, even when three hundred men were engaged, a larger space in the ship than would [now be required for a steam engine of one hundred and fifty horse-power, and her fuel for twenty days. A glance at the illustrations will show that, by the plan suggested, the whole of the fore and after holds of the midship portion of the galley, besides a large space below the platform of the rowers, could be appropriated to cargo and stores, the fore and after maindecks to troops, while the rowers themselves could be berthed in that portion of the vessel where they performed their daily toil, and where there would be space, however uncomfortable, for their beds and scanty apparel. These arrangements will, however, be better understood by a reference to the accompanying deck plan (Fig. 4), and comparing it with the side view and midship section previously given. Here it will be seen that the portion of the galley occupied by the rowers was open, though doubtless covered with an awning in warm, and a tarpaulin in wet weather. To have enclosed this space with a deck would have been fatal to the men, as human beings, especially during the summer months, almost the only time when the galleys were employed, could not have existed, much less have laboured in a confined hold. Besides being open, there would be thorough ventilation, not merely by means of the air passing through the oar-ports, but by the constant current which, in all weathers, passed through the trellised framework, extending from the upper stringer or gunwale to the side platform or *catastroma*, where the troops were frequently placed, and which formed the connection between the poop and forecastle decks. "The soldiers," remarks Thucydides, "occupied the *catastroma* on the further side." It will therefore be seen, that this form of an ancient war-galley, while it answers every requirement of such a vessel, corresponds, even in matters of detail, with the scanty and imperfect accounts

of ancient writers. "When they began," remarks Thucydides* in another place, "to engage with each other, they could not be easily pulled asunder, both on account of the multitude of ships, and also because they chiefly trusted to the soldiers on the *catastroma* for obtaining the victory."

It may, however, be remarked that in all such matters the statements of the ancient writers are frequently very conflicting, or apparently so. For instance, the same author, describing the galleys of the Bœotians and of Philoctetes, of whom Homer also writes, says, "Nor had they, as yet, *covered* ships;" † whereas we find in the "Iliad" such expressions as, "He marched upon the *hatches* with long strides;" and in the "Odyssey," where Ulysses is preparing to encounter Scylla, "upon the *hatches* of the prow of the ship he went." Mr. Howell, it is true, in opposition to the views of most translators, says that the *hatches* should be construed as meaning "the thwarts or seats upon which the rowers sat:" ‡ but it is obvious that no other construction can be put upon the word except that it meant the *hatches* of the hold, which being slightly elevated above the level of the deck, would be a much more likely place for the master or officer of the galley to walk than upon the thwarts where the rowers sat; and this opinion is confirmed by the expression in the latter quotation, where "the *hatches of the prow*" are distinctly mentioned as the covering of the entrance to the fore-compartment or hold of the galley.

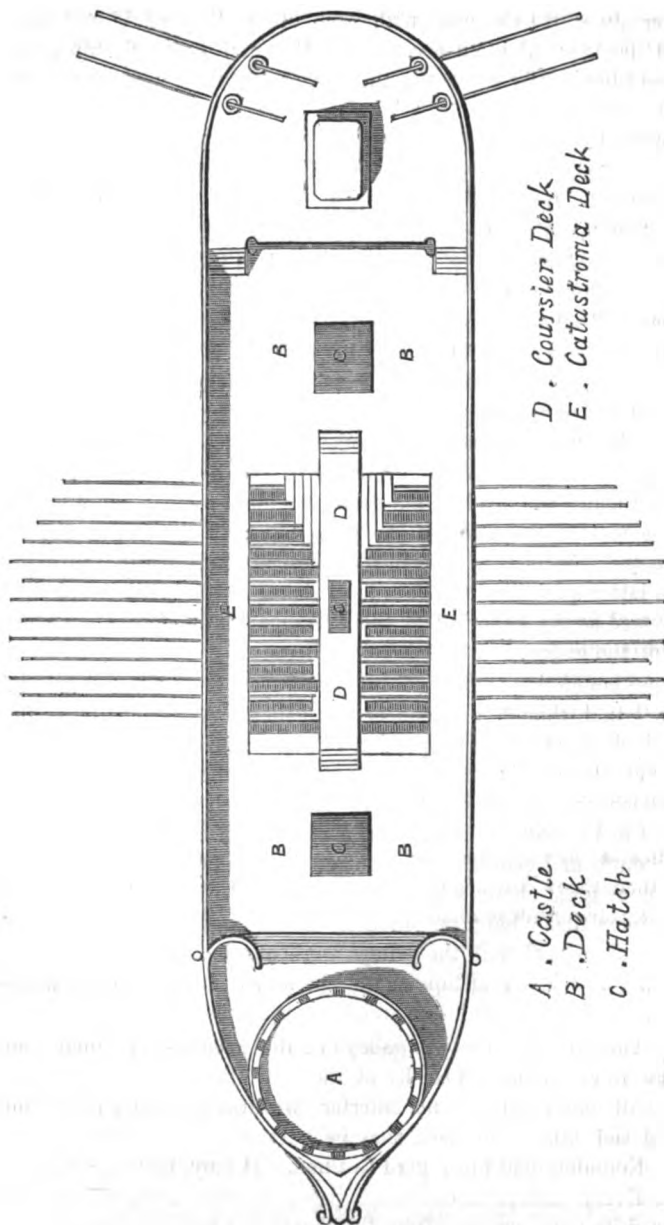
These conflicting statements may, however, be easily accounted for by the fact that, though portions of the galleys were open, other portions were decked, while the proportion of the open and closed spaces must have varied according to the class and size of the galleys or the purposes for which they were employed. In all such matters, also, different nations had doubtless different arrangements, if not in the form, at least in the outfit and general equipment of their galleys, and these must have undergone great changes in the course of centuries. Nor does it modify the opinion that "*hatches*" in their literal sense are meant, for in the time of Homer, though the galleys were all single-banked and "open," they had a deck in midships and at the bow and the stern, as well as the *catastroma* or platform in the waist, for the use of the soldiers.

Although most of the war galleys of the ancients had high towers at the stern, and more especially at the bow, these were frequently temporary erections, and did not interfere with the general plan of the solid hull of the ship. Nor need they be here noticed, as little or no difference of opinion exists in regard to them. It may, however, be remarked

* Vol. i., cap. xlix.

† *Ibid.*, cap. x.

‡ Howell's Pamphlet, p. 7.



D. Coursier Deck
E. Catastroma Deck

A. Castle
B. Deck
C. Hatch

Fig. 4.

that they appear to have varied in form and size, with the galley, the purposes to which she was applied, or the fancy of her owners; and that the oar-ports could not have been of the form generally drawn. They are more likely to have been oblong, fashioned in such a shape as to allow the oar which, in large galleys of many banks, could only be unshipped by being passed outwards, to be brought pretty close alongside of the vessel when the rowers ceased work. In regard to the seats, stools, or benches of the rowers, so frequently mentioned, and which have created a good deal of controversy, the plan here suggested satisfies all these requirements, for to each rower a separate seat or stool attached to the oblique benches or steps is appropriated. The height of each of the oar-ports above the level of the water, in that of the quinquereme, and in all vessels of greater dimensions, would be as follows:—

	ft.	in.
From the first or lowest <i>port</i> to water line	2	0
Distance between 1st and 2nd port	1	9
" " 2nd " 3rd "	1	9
" " 3rd " 4th "	1	9
" " 4th " 5th "	1	9
	9	0

So that the height of the sill of the port on the fifth or highest bank would be nine feet above the water line.

The space between the rowers seated on their respective benches or platforms, doubtless varied according to the size of the galley. While from four to six feet between each rower seated on the same level would be ample in the case of either uniremes, biremes, or triremes, galleys of the larger class, in many cases, most likely had an intervening space of from six to even ten feet, so as to afford room for the sweep of the handles of the oars, and enable the rowers to walk one or two steps aft and then throw themselves backwards with greater impetus into their seats as already described.

SUMMARY.

The conclusions at which we have arrived may be condensed as follows:—

1. Ancient galleys were classed or rated according to their number of banks, rows, or tiers of oars.
2. All galleys above the unireme had their oar-ports placed obliquely above each other in horizontal rows.
3. No galley had more than five horizontal rows.
4. Every galley, from the unireme to the quinquereme inclusive, derived its name or class from the number of *horizontal* rows.

5. All galleys, above a quinquereme, were likewise classed according to the number of rows. In their case, however, the *oblique* rows were counted; but in all cases, from the smallest to the largest, including Ptolemy's tesseraconteres, *each row, whether oblique or horizontal, was a distinct bank of oars, which, like the number of guns wherever they were placed in wooden men-of-war, constituted the only basis for their classification.*

6. The portion of the galley appropriated to the rowers and their oars was as separate from the other portions of the vessel as is the machinery of a paddle-wheel steamer. The rowers, also, like the modern engineers and stokers, were entirely distinct from the seamen and marines; and amongst them were leaders and crack rowers, who were as indispensable to get the galley under weigh and keep the rest of the rowers in time, as are the engineers of our own day, who start and keep the machinery in proper working order.

In a word, the row-galley constituted the steamship of the ancients, as distinguished from their sailing vessels. She had sails to aid her progress when the winds were fair, as a steamer now has, but the one depended on her oars as much as the other now does upon her machinery; and, however vast the improvements, there is really no difference in principle between the galley of the ancients and the steamship of to-day. In practice they are the same, except that steam is substituted for manual labour. An oar is a paddle, and the blades of the oars fastened together, like the spokes round the axle of a wheel, and projecting into the water, constitute the paddle-wheel of modern times.

THE SEAMANSHIP OF ULYSSES.

ONE day last month, after having looked through the wreck reports, casualty returns, depositions, reports of official inquiries into wrecks and misconduct, as printed in the *Shipping and Mercantile Gazette*, and the various reports daily furnished by the post, the telegraph, and the general press, respecting the navies of the world; and after having been refreshed by reading the reports of cases tried before the learned Judge of the Admiralty Court, one of our friends of a speculative, and to our thinking somewhat of an ironical habit of mind, called in; and, after passing his congratulations and the usual civilities, inquired of us whether we did not find our mind enlarged, and our morality strengthened

by studying the great truths conveyed in the reports and statements we had been perusing; and whether those statements, etc., did not specially impress us with the fact that casualties attendant on even an ordinary voyage, arise from causes beyond human control—causes that no human foresight nor prudence can anticipate. Our friend, who by the way is an underwriter, then, to our mind, with singular bad taste, went on in the following strain: "Have you," said he, "never been impressed by the fact that in shipping cases taken into court, there is a marvellous similarity in the evidence given by witnesses on opposite sides with regard to the same casualty. In cases of collision for instance," said he, "do you not find the opposite parties to agree in the most obvious statement of fact. In cases of stranding again," said he, "one is always impressed in favour of the masters and officers of the ship, for they never appear from the protests and depositions they afterwards make to have done anything wrong, or to have neglected anything right—the lead or look-out for example. Their compasses get wrong, or a current exerts an unexpected and surprising influence, or the water unexpectedly shoals, or scurvy appears, or the master or an officer experiences an unexpected aberration of intellect, or something else altogether unaccountable happens which ends in bringing the ship to grief, or—;" but here we stopped him. It would be out of place for the Editor of the *Nautical Magazine* to hear patiently any abuse of the British Merchant Service. So we dismissed our visitor with as much civility as we were able under the circumstances to command. However much we disapproved of his manner and his words, their substance impressed themselves on our mind. They had recalled an observation (we had otherwise forgotten) made by a contemporary when reviewing, some years ago, certain acts done by a certain seaman on a well-known occasion. That observation was in effect that the seamanship of the said seaman was the "Seamanship of Ulysses."

With regard to our friend's sneer at the truthfulness of reports and protests generally, we say that if these protests are not true they ought to be. We hold, however, that a certain halo surrounds the nautical profession, and above all we contend that from time immemorial, a sailor has been allowed and has the right to tell his own story in his own manner.

Having pondered over the allegation of our contemporary, that the seamanship of a certain seaman was the "Seamanship of Ulysses," and having read many and many a deposition and protest made by modern sailors after a casualty, it occurred to us that it would be well to get

some trustworthy person of business habits to look back to the most ancient narratives of wreck, and ascertain if they differed in their completeness, accuracy, and colouring from the most modern. This arduous task we entrusted to one of our correspondents, who is largely engaged in business as a shipping agent in one of the northern ports. He has been to sea, and therefore is specially qualified for the work we entrusted to him. It occurred to us that the "Odyssey" might furnish food for comparison and reflection. We accordingly requested our correspondent to report on the trustworthiness of the deposition or narration made by Ulysses. The report is as follows:—

REPORT FROM OUR CORRESPONDENT.

(Copy.)

"SIR,—I think it right in acknowledging cheque you sent me, and in execution of commission you have honoured me with, to let you know that I do not understand Latin, and do not know letter of Greek. Not useful in my line of business. For referring to adventures of *Ulysses* as instructed, have therefore bought (account herewith) English version of 'Rhymes of Homer,' purporting as duly made by Mr. Alexander Pope. Of this gentleman's private reputation, am in ignorance. Hope he is more to be trusted than some persons who translate ships' protests now. Whether translation of A. Pope is good do not know. If he has misapplied nautical terms, as sometimes to be feared, or improperly described ships and their tackle, apparel, and furniture, it is his business, not mine. Am led to make this observation by way of preface, because, said A. P., describes ships as having been 'rolled on levers,' and as having 'crooked keels;' and further implies that shrouds* are carried away by the wind first, and masts and yards suffer afterwards. In one line Mr. Pope says, 'the crooked keel divides the yellow sand.' It may be that said keel was crooked because experience of said skipper was deficient, and led him to 'roll' the ship 'on levers,' (most improper proceeding) instead of going to expense of rollers, or proper cradle, or blocks and ways, for transporting along beach. Hope Mr. A. P. has not invented said apparent inconsistencies, but, as afore-said, know nothing of his character. My business is with ships' agencies and not with literature. Have, per instructions, merely to look at said matter from own business point of view. Present report commences with Book No. 7, of "Odyssey." Find report more difficult than could have wished. In some cases only does Mr. P. give verbal report of Ulysses.

* "The mountains' billows roar! the furious blast
Howls o'er the shroud and rends it from the mast,"

Appears from No. 7, that navigator got wrecked at Phœacia, and that he had had a passage, accompanied with much wind, rain, and heavy cross sea, said ship working continually, and shipping water over quarter and poop, in some cases taking it in for'ard; on several occasions appears that sheer strake was down to water. Cannot find any mention that skipper used lead or log-line. Cannot find that said skipper kept D.R. at all, or took much heed of course steered. Whether ship was seaworthy before commencement of voyage leave for future observations. On these points and others will touch at proper time. Ship foundered, and captain, with assistance of life-belt, escaped. He got ashore more dead than alive, and was taken care of, and restored by means then used—viz., he was left in sun to dry—and after his restoration, made a statement to receiver of wreck, or officer administrating government of country, as to voyage from Ogygia to Phœacia, and as to build, equipment, launching, and loading of said ship at former place. From captain's statement, as translated by Mr. Pope, part is extracted to show how very loose it is. When called on to state facts, skipper began in usual loose way, as follows:—

“ An island lies
Beyond these tracts and under other skies.’

On being desired by court to be more precise, captain gave name of said island, thus

“ ‘Ogygia named in ocean’s wat’ry arms,
Where dwells Calypso, dreadful in her charms.’

He goes on then in a confused way to explain that he was used to shipwreck, and that he had been wrecked at Ogygia. Captain does not give good account of how he came to get ashore at Ogygia. Do not therefore intend to enlarge on seamanship of voyage that ended there. May, however, mention that from what is to be gathered from statement of said captain made to the authorities at Phœacia, which is full of irrelevant matters captain appears to have previously had command of a squadron of seventeen vessels, lugger-rigged and propelled by oars, and to have arrived at Ogygia with only one plank of one of said seventeen ships. Said seventeen luggers, appear to have been struck by lightning, and skipper appears to have been exposed to great hardships from wind and sea for nine days without food; and, finally, to have been stranded with his said plank—wind at time of stranding, W.S.W. about, force 6—on a lee shore. As regards building of new ship in which Captain U. afterwards made voyage from Ogygia to Phœacia, find on reference to Book 5 of “Odyssey,” that when captain got ashore at Ogygia, he found there a party, a lone woman, name of Calypso, who took in single-men lodgers when she could get them. Said party (female) seems to have

had nice sort of place there, and captain seems to have been pretty comfortable in her establishment on the whole. Captain refers to landlady sometimes as a 'nymph' and sometimes as a 'goddess'—loose mode of expression, and somewhat too familiar. Said epithets were in those days no doubt similar in signification to 'duck,' 'pet,' 'darling,' &c., &c., and other terms of endearment at present day. Captain appears to have become rather dull at last. Establishment in which skipper stayed, '*The Calypso's Arms*,' seems to have had much in common with seamen's boarding houses of present day. Landlady appears to have waited on captain herself, and taken him in and done for him very well. Said landlady was also a sail-maker and tailoress, as (note further on) she made sails and pea-jacket, or as Mr. A. P. calls it, a 'cumbrous vest.' Skippers don't wear cumbrous vests. Said landlady also appears to have served as a stevedore, for note in captain's protest further on (which see) that she 'heaved' the cargo 'aboard' to the skipper. In one important respect '*The Calypso's Arms*' differed from seamen's boarding houses of the present day—viz., there were no female attendants. The captain, even in those days, was treated as most sailors are now treated in good boarding houses; landlady was kind to him as long as he stayed. She, unlike the modern seamen's 'hammock-snatcher,' would not detain his effects, if he had had any, but as he had none, and was determined to go, she assisted him to get another ship. This must have been so, as said landlady also supplied food and clothing, and medical comforts, and anti-scorbutics for voyage. As captain's new ship was soon wrecked, it is worth while to take some notice of it now. In first place, captain built it himself, and it is not at all certain what his ship looked like when finished. Does not appear that said ship was caulked or painted; probably had a defective keel, and bad shrouds. Captain was doubtless troubled in building ship, because he had to take some directions from landlady, who cannot have known much more about shipbuilding than the captain did. Landlady appears to have been a genius. Appears to have taken the captain into her pleasure grounds (note, hers was a 'marine residence, delightfully situated'), and to have pointed out some trees, and told him (*vide*, Mr. Pope's words), to

"Go, fell the timber of yon lofty grove,
And form a *raft*, and build the *rising* ship.'

"From word 'raft' being used by landlady in said instructions which captain obeyed, the ship, as called, had flat bottom. Was also probably too great a '*rise*' of floor. Description of wood injudiciously selected by captain was poplar, pine, and fir; but whether skipper selected poplar under landlady's direction, because she had no use for it, or, as captain

himself had to fell trees, because poplar wood is soft, am unable to say. Skipper built a flat-bottomed, square-rigged craft in four days. Sails were ordinary pudding-bag sails. Following statement in verse from captain's report at Phœacia, explains ship:—

“Long and capacious as a shipwright forms
Some barks broad bottom to outride the storms,
So large he built the raft: then ribbed it strong
From space to space, and nailed the planks along;
These formed the sides: the deck he fashioned last,
Then o'er the vessel rais'd the taper mast,
Thy loom Calypso! for the future sails
Supply the cloth, capacious of the gales.
With stays and cordage last he rigged the ship,
And roll'd on levers, launched her in the deep.

Four days were pass'd, and now the work complete,
Shone the fifth morn: when from her sacred seat
The nymph dismiss him, (od'rous garments giv'n)
And bath'd in fragrant oils that breath'd of heav'n.
Then filled two goat skins with her hands divine,
With water one, and one with sable wine;
Of every kind, provisions heav'd aboard;
And the full decks with copious viands stor'd.

And now rejoicing in the prosp'rous gales,
With beating heart Ulysses spreads his sails;
Plac'd at the helm he sat, and mark'd the skies,
Nor clos'd in sleep his ever watchful eyes.'

“When ship was finished and when landlady had ‘heaved’ the provisions aboard, wind being fair, W.S.W., force 6, sea calm, captain, like McGregor in the *Rob Roy* canoe set out all alone. Had to set sails himself and steer and work ship. Although there is no evidence that craft was not ‘tight, staunch, and well found in every particular,’ note, that she carried on this voyage dangerous deck cargo. Captain seems to have been much overworked during voyage as he steered and worked ship for seventeen days, weather fair, wind and sea moderate, N.N.W., when land was sighted on eighteenth (18) day, Captain was quite worn out, and indulged too freely in wine supplied by landlady. Seems on eighteenth day that ship encountered bad weather with baffling winds, about force 8, and heavy cross sea which caused ship to roll heavily and take in water over all. She seems to have sprung leak aft and deck cargo shifted. Note, captain and landlady had omitted to supply pump or life-boat. Ship eventually foundered and became ‘a total loss.’ Captain’s statement of foundering as given below can only be accepted as proof of haziness of intellect. Skipper seems to have believed at one time he was crossing the line, for he deposes of Neptune that that deity—

“ . . . spoke, and high the forky trident hurl'd,
 Bolls clouds on clouds, and stirs the wat'ry world;
 At once the face of earth and sea deforms,
 Swells all the winds, and rouses all the storms.
 Down rush'd the night: east, west, together roar;
 And south, and north, roll mountains to the shore.’

Skipper was evidently unsettled in mind to believe this of Neptune and of winds. A reference to Captain Toynbee (who I see contributes to new series of *Nautical Magazine*), of meteorological office, will satisfy you, Sir, and readers of *N. M.*, that Neptune is only seen aboard ship in fine weather and when crossing line, and that the wind does not blow N. by S. and E. by W. Moreover, have never heard of any other ship-master who has reported night as ‘rushing down.’ Some have deposed, however, that ‘deck has jumped up’ and struck them, but have always doubted that. Captain’s conduct is very strange in some other respects; for instance, he appears to have sat on counter or taffrail talking to himself when steering craft, in a heavy following sea with winds baffling; and when we consider that having to do all work of ship himself, he did not take off the fancy cumbrous ‘vest’ supplied by his landlady, his conduct was culpable; but skipper suffered from his indiscretion. *Vide*, Mr. Pope’s translation of report continued—

“ A mighty wave rush'd o'er him as he spoke,
 The raft it cover'd, and the mast it broke;
 Swept from the deck, and from the rudder torn,
 Far on the swelling surge the chief was borne:
 Long press'd, he heav'd beneath the weighty wave,
 Clogg'd by the cumbrous vest Calypso gave.’

But he goes aboard again, for Mr. P. says—

“ He seized the raft, and leapt into his seat.’

Captain then found life-belt (which seems to have been supplied to ships in those remote times) and took care of it, and it ultimately saved his life; but the roundabout statement captain makes of a bold young person of female sex, swimming out to ship and giving it to him, and this with wind, as he says, N.S. by W.E., force 12, sea disturbance 21, and making a clean breach over her, and cargo shifted, and ship breaking up, is further proof of Captain’s disregard of fact. Note, skipper calls life-belt a ‘scarf’ and sometimes a ‘cincture’

“ ‘Swift as a seamew springing from the flood,
 All radiant on the raft the goddess stood:
 Then thus addressed him.
 Strip off thy garments; Neptune’s fury brave
 With naked strength, and plunge into the wave.
 This heavenly scarf beneath thy bosom bind,
 And live; give all thy terrors to the wind.’

“Captain appears still to have been in a questionable state of mind after getting his life-belt aboard. He appears to have again indulged in bad habit of talking to himself. Whilst thus employed, he must, according to Mr. Pope’s book, have been much surprised, for it would appear—*vide* report continued—

“Like a black sheet the whelming billow spread,
Burst o’er the float, *and thunder’d on his head.*

And now a single beam the chief bestrides ;
There, pois’d awhile above the bounding tides,
His limbs discumbers of the clinging vest,
And binds the sacred ‘*cincture*’ round his breast :
Then prone on ocean in a moment flung,
Stretched wide his eager arms, and

“There is considerable doubt as to facts detailed after this, of skipper swimming about for two nights, and washing up on a lee shore again. If report is to be believed (which please see places marked in copy), it would appear that captain struck against a cliff,

“And stuck adherent and suspended hung,’

And then fell off into the sea again. Captain, however, saw mouth of stream, and, according to Mr. Pope, swam ashore all right without aid of early equivalents for rockets, or mortars, or lifeboats, which proves that captain wore life-belt.

“You will see, Sir, from above copious extracts and my comments that I do not think that Ulysses was a prudent navigator. You will further see that, in my opinion, the captain enlarged (drew long-bow, as we call it ashore) to great and unwarrantable extent. This is confirmed by his excuse on another of his voyages, which also ended in distress when he had gone to sleep without giving charge of deck to a competent officer. Captain’s report of this disaster is conclusive that he forgot himself when making protests and depositions. He actually represented *that the winds* of heaven, all except one wind, *had been given to him in* (4) *bags!* and that the sailors opened bags to let winds out when skipper was asleep, said winds (N., S., E., W.) being all let out together in said unexpected manner, the skipper says almost wrecked all his ships—most barefaced statement to cover gross dereliction of duty. But let skipper tell the story, which, he does as follows—*vide*, report continued :—

“The King with mighty gifts my suit approv’d.

* * * * *

The adverse winds in leathern bags be brac’d,

* * * * *

Compressed their force, and locked each struggling blast:
 These in my hollow ship the monarch hung,
 Securely fetter'd by a silver thong ;

* * * * *

Nine prosp'rous days we ply'd the lab'ring oar ;
 The tenth presents our welcome native shore :
 The hills display the beacon's friendly light,
 And rising mountains gain upon our sight.
 Then first my eyes, by watchful toils opprest,
 Comply'd to take the balmy gifts to rest ;
 Then first my hands did from the rudder part
 (So much the love of home possess'd my heart)
 When lo ; on board a fond debate arose ;
 What rare device those vessels might enclose ?
 What sum, what prize from Æolus I brought ?
 Whilst to his neighbour each express'd his thought.
 But come my friends, these mystick gifts explore,
 They said : and (oh curs'd fate!) the thongs unbound !
 The gushing tempest sweeps the ocean round ;
 Snatch'd in the whirl, the hurried navy flew,
 The ocean widened and the shores withdrew.'

“ I must now conclude. I hope, Sir, that I have reported as you wished. Would now suggest, as Suez Canal is opened, and as our sailors may have frequently to make voyages on waters that gave so much trouble to Ulysses, that Receivers of Wreck will be very careful how they take down depositions of masters whose ships meet with casualties anywhere near Ogygia or Phœacia.

“ I have the honour to be,

“ (Signed)

X. Y. Z.

“ *Lloyd's Agent ; Agent to the Underwriters of London, Paris, New York, and Hamburg ; and Vice-Consul for the United States, France, Belgium, Holland, Denmark, Russia, and several other States.*”

Having read the above report of our business correspondent (whose name we purposely omit), it appears to us that he is too hard on poetical license, and does not make sufficient allowance for the excitement and prostration under which officers of ships suffer after so dire a calamity as a shipwreck.

LADY ASHFORD'S BALL.

BY PERCY HAMILTON.

The light falls softly from the crystal lustres,
 Which hang like meteors in the gilded rooms,
 Where rare exotics, heaped in rainbow clusters,
 Wooed by the heat, breathe forth their strange perfumes,
 Foot-stirring strains of music rise and fall,
 And all is gay at Lady Ashford's Ball.

The women, decked in richest silks and laces,
 Vie with each other to be loveliest ;
 The men you see around have world-known faces,
 And carry stars and orders at the breast.
 The army, navy, bar, and senate—all
 Have met to honour Lady Ashford's Ball.

They smile and gossip as they watch the dancers—
 A living bouquet, a kaleidoscope—
 Now struggling through the figures of the Lancers,
 Now whirling in the waltz or gay galoppe :
 The pleasures of the dance can never pall,
 At all events at Lady Ashford's Ball.

The mothers may be proud with right good reason
 Who own a daughter in these bright saloons,
 For here are all the beauties of the season,
 And many a brilliant star amongst the moons ;
 And hearts that never bowed to beauty's thrall
 Are captives made at Lady Ashford's Ball.

Here are the choicest types of England's daughters,
 Blue eyes and brown eyes, black and golden hair.
 Our fairest flowers, transplanted from all quarters,
 To bloom awhile in London's smoky air ;
 But Lily Norton is pronounced by all
 The belle of belles at Lady Ashford's Ball.

Her beauty is beyond the pen of poet,
 Her eyes are changeful as the ocean's blue,
 Her dark hair, with a dash of sunshine thro' it,
 Would baffle anyone to name its hue ;
 As graceful as an aspen, slender, tall,
 She moves, the queen of Lady Ashford's Ball.

The young men for a dance would fain secure her ;
 The old men strive to win a passing smile :
 To both she seems an angel ; nothing purer
 The heart of young or old could well beguile.
 To few can she give dances, but to all
 She gives her smiles at Lady Ashford's Ball.

One says her head reminds him of the Clyde,
 Another of some rare antique at Rome,
 Another likens her to Aphrodite,
 Her white dress surging round her like sea foam,
 As whirling in the dance her footsteps fall
 As light as flowers at Lady Ashford's Ball.

It is the prelude to the "Wiener kinder ;"
 A partner claims her for her favorite waltz,
 And off they fly ; nought seems their course to hinder,
 Till suddenly as pale as death she halts.
 "My heart !" she cries, "hold me, or I shall fall."
 And tenderly he bears her from the Ball.

They chafe her hands, sprinkle her face with water,
 Like dewdrops on her flowers the water lies,
 Her mother comes and calls upon her daughter
 To speak one word, to open her closed eyes.
 Alas ! Poor Mother ! 'Tis in vain you call,
 You will not wake the Beauty of the Ball.

Some of the dancers ask what is the matter—
 But only those who happen to be by.
 The orchestra strikes up the "Morgen blatter,"
 And few there are who wait for a reply.
 "Some one has fainted from the heat, that's all."
 And on they waltz at Lady Ashford's Ball.

And now the early summer daylight dawning,
 Steals pale and blue into the heated rooms ;
 And those who do not wish the summer morning
 To point out faded flowers and ruffled plumes
 Are waiting in the cloak room and the hall,
 Till they can drive from Lady Ashford's Ball.

The self-same light of early morn is peeping
 In at a chamber window. By the bed
 A mother, with a heart too crushed for weeping,
 Kneels gazing at her daughter cold and dead—
 Dressed in the same gay robe, the same rich shawl
 That she had worn at Lady Ashford's Ball.

The guests at last have gone. The lights have faded
 Before the sunshine of the morning hours.
 The hostess and her daughter, pale and jaded,
 Are left alone amidst the hot-house flowers,
 And as to bed with weary steps they crawl
 They all agree it was a splendid Ball.

"Miss Norton's death has robbed me of all pleasure:
 How sad, Mamma, so young and fair to die!"
 Grace was the youngest, and the world's cold pressure
 Had not yet time her heart to petrify.
 "Yes," said her mother, with a sleepy drawl,
 "How very sad!—It might have spoilt our Ball."

THE SAVAGES OF TERRA DEL FUEGO.

It is gratifying to learn that the Chilian Government are alive to the necessity of taking active measures with a view to prevent the recurrence of the atrocities which were perpetrated by the savages of Terra del Fuego, in the case of the British brigantine *Propontis*.

It will be remembered that the *Propontis* was passing through the Straits from the Atlantic side, and that the master, who was also the owner, anchored off Cape Gallant, in order that a supply of wood and water might be obtained. For this purpose the master, accompanied by three of the crew, proceeded on shore. The boat not returning, the mate, with two seamen, went on shore in search of them, and found that the master had been massacred, and his body frightfully mutilated, but could

find no trace of the other three men, whom it is presumed met a similar fate.

Whilst in the act of conveying the remains of the master to the boat, a large body of infuriated savages were seen approaching, so that it was as much as the mate and seamen could do to run to their boat, which they fortunately reached, and succeeded in getting on board. The brig slipped her cable and set sail, which had they not done, there is little doubt but that everyone on board would have been massacred.

The scene of the outrage was visited a couple of months afterwards by H.M.S. *Charybdis*, and Captain Lyons sent an armed force on shore with instructions to bring on board any natives they might meet, in hopes that some light might be thrown on the fate of the missing men. Several natives were seen, and, after a considerable chase, an Indian was captured. He made a statement to the effect that Captain Barnes and the three men of the *Propontis*, whilst engaged in cutting wood, were set upon by a party of Fuegians, and all four were barbarously slaughtered. He likewise stated that a portion of the body of the master was eaten, and that the corpses of the other victims were thrown into the sea. The alleged plea for the attack being that the captain had first fired, and wounded one of the Indians.

On intelligence of the massacre reaching Santiago, Mr. Thomson, H.M. Chargé d'Affaires, made a representation to the Chilian Government on the subject, who at once took up the matter, directed the Governor of the Magellans to inquire into the case, and endeavour, if possible, to bring the implicated Indians to punishment.

It appears that the Governor accordingly organised an expedition against the Fuegians. This expedition consisted of a schooner commanded by the gentleman who owned it. After cruising about for upwards of a fortnight in the dangerous navigation of the Straits of Magellan, landing and interrogating any Indians they could come across, though with little result, except that by this means the mutilated body of Captain Barnes was discovered and buried, the schooner was unfortunately wrecked on the Island of Latitude, and the crew had to save themselves in their boats. Thus, so far, as the primary object of the expedition was concerned, namely, the infliction of exemplary summary punishment on the Indians, it proved a complete failure.

The authorities at Santiago, we are glad to see, have determined not to let the matter drop. They are about to submit a Bill to Congress, asking the sanction of the Chambers to their purchasing for employment in the Straits a vessel of sufficient steam power to act as a tug and for police service. This measure, if carried into operation, will tend to diminish the risk run by small vessels in navigating the Straits, and prevent the recurrence of disasters like that which happened in the case of the *Propontis*.

H. M. S. "MEGÆRA."

Stant littore puppes, as Virgil and Mr. Thomas Ingoldsby have observed, and certainly not a few of H.M. ships have been standing for the shore latterly—some improperly, but one, the *Megara*, at any rate, quite properly. The court-martial held on Captain Thrupp distinctly and honourably acquitted him as regards the running ashore. The elaborate report of the Commission just issued establishes beyond a doubt that the ship ought never to have been sent to sea. The Commissioners are emphatic, and unanimously give it as their "decided opinion that the state and condition" (we don't quite understand the difference between "state" and "condition") of the *Megara* were such "that she ought never to have been selected for the voyage to Australia, and that, as a matter of fact, she was an unsafe ship when she left Sheerness."

In effect, the opinion of the Commissioners is that the leak was the result of negligence, of careless inspections, consequent ignorance of her condition, and mismanagement or indifference among the chiefs, which kept them in darkness as to the true state of the ship—"The cause of the leak and of the defective condition of the plates in its vicinity was the continued corrosive action of bilge water on unprotected iron." "The loss of the ship is in our judgment to be attributed to the want of adequate protection to the inner surface of those plates."

It is very satisfactory that the Commissioners have not only discovered these facts, but that they have also found out who is to blame, and how the dispatch of the ship came about. We do not intend to go into the details of the case, because the report itself will be in the hands of most of our readers before these pages are printed, and because we hold that the aim of the inquiry is to expose the weaknesses of maladministration, with a view, not to recrimination, but to amendment—not the grieving over spilt milk, but the preventing of spilling any more.

After the marvellous unanimity amongst the witnesses on one point—viz., the absence of the responsibility of each one of them, or, as the *Times* puts it, considering that under the present system "each seems anxious to reduce his duty within the smallest possible limits," we have no doubt that a new system will speedily be inaugurated.

The censure conveyed in this report will also, we trust, make official men of all ranks more vigilant, by showing them that a blind adherence to a formal routine will often lead them into an embarrassing position, more especially when the formal routine itself is defective. The opinion of the Commissioners is that officers too often appear "to have done no more than each of them thought it was absolutely necessary to do; following a blind routine in the discharge of their duties, and acting almost as if it were their main object to avoid responsibility."

We are glad to observe that although it was not included in their instructions, the Commissioners have felt themselves called upon to make some observations reflecting upon the now defunct system of Admiralty administration. The truth is, that there was really no official record which would show the actual condition of the ship at any time, and consequently her condition was never known. A disgraceful state of things made worse by the mechanical service of the dockyard officials, who attended only to the letter of instructions, or at any rate understood them in such a manner as would involve the least labour and responsibility.

There can be no doubt that a special providence watches over us as a nation, and just as providence sends vermin to torment us unless we keep ourselves bodily clean, so providence has sent us the detestable *Megara* to warn us to be stirring in our public administration. The *Megara* was the bugbear of every one, and the best thing she ever did was to lose herself. It was providential that she was not sold out of the service, but was kept in it to be lost, since by her loss the light of day has been thrown on the vicious system under which the most important of our departments as a maritime nation so long suffered.

As regards the immediate cause of the loss of the ship, viz., the undiscovered decay of the iron hull, it is shown that this decay was brought about by using an improper substance—Spence's cement—for coating the inside of the ship. This absolutely worthless stuff was put on and was left on, and no examination approaching to a complete survey was ever made of the parts to which it was applied. Hence the inside of the ship's skin was practically unprotected, and, as a matter of course, went to decay.

The report of the Commission, we regard, on the whole, as a satisfactory piece of workmanship. Whilst sparing the First Lord, it hits out right and left fearlessly, and it touches not only on points directly within the scope of the Commission, but on others also. On a question which has arisen between Mr. Rothery and the other Commissioners as to the amount of blame to be attached to Sir Spencer Robinson and the Dock Yard Officers, the opinion of so able a lawyer as Mr. Rothery must command attention. Under the circular orders of the Admiralty it is the dockyard officers who are responsible for the condition of the inside of a ship. Sir Spencer Robinson, sitting in his chair at Whitehall, could not possibly of his own knowledge know anything of the condition of an old ship, but the dockyard officers could; and therefore it is more reasonable to blame them if they did not know, than to blame Sir Spencer, if they did not examine thoroughly and report to him, or if, in the multiplicity of business, he failed to remember facts that even the register and documents in his office have failed to record.

We are not in a position to comment upon Lord Henry Lennox's

motion in the House of Commons, which is now deferred till after Easter ; but we must offer one observation which may possibly present some extenuating plea for those implicated at the Admiralty. And, in doing so, we beg to state that we are influenced solely by motives of justice. We cannot help thinking that the effect of Mr. Childers' reforms had a good deal to do with the disarranged and irregular state of things at the Admiralty. We are not blaming Mr. Childers for his reforms ; indeed, we think, and the report clearly shows, that reforms were urgently demanded ; but, still the changes were, at the time of the sending out of the *Magera*, then coming into operation, and would probably upset the official arrangements very considerably. We are somewhat surprised that the Commission have taken no account of this point.

The persons severally found to blame by the Commissioners are :—

1. Sir Spencer Robinson, who is said to be "mainly responsible for the misfortune which befel the vessel." The Commissioners pay a high tribute to Sir Spencer, but unflinchingly give their opinion all the same.

2. Sir Sydney Dacres, who had been informed by Sir Spencer Robinson that he did not consider the ship well adapted for the service, is found fault with because he did not call for and discuss the reasons and grounds for Sir Spencer's opinion before incurring the responsibility of sending the ship to sea. He is also blamed for placing officers in charge who had not sailed in iron ships before.

3. Mr. Reed, the late Chief Constructor, is blamed for not making the examination in 1866 a complete one.

4. Mr. Barnaby is blamed for not calling the attention of Lord J. Hay to the weakness of the ship's plating when asked as to her condition in 1871.

5. Mr. H. Morgan is blamed for neglecting to inform the Sheerness officers in April, 1870, of previous reports as to the ship's condition.

6. Captain Luard is blamed for sending a telegram to the Admiralty on 13th August, 1870, without knowledge of the ship's previous history. He is also blamed for the defective condition of her ports on leaving Sheerness.

7. Mr. Wm. Ladd, Mr. W. H. Henwood, Mr. A. B. Sturdee, Mr. William Mitchell, master shipwrights and assistant-master shipwrights, are blamed for never making a thorough examination of the interior.

8. All engineers and carpenters who have ever served in the *Megara* are blamed for not having reported that parts of the ship were inaccessible. (We trust that all engineers and carpenters now serving afloat will at once report to their superior officers full particulars of all inaccessible places on board.)

9. Captain Thrupp is blamed for not taking care that the cargo was properly stowed before leaving Sheerness.

CAUGHT.

ROBIN always chose the heather,
 Where the mountain breezes blow;
 When we used to roam together,
 Not so very long ago.
 Now he seems to care no longer
 For the breezes on the hill,
 But each day his love grows stronger
 For the valley by the mill.

Now he gathers briar roses,
 But to throw them in the brook;
 Or pretends to read, and doses
 In some hazle-shaded nook.
 Now across the foot-bridge railing
 Lazily he whips the stream,
 Whistling to the trout, and grayling,
 Half awake, and half a-dream.

But it is at Moreton water
 That he oftenest throws his fly,
 And I think the miller's daughter
 Guesses well the reason why.
 Her sweet eyes, I need not ask it,
 All this sudden change have wrought;
 Empty lies the fishing basket,
 It is Robin who is caught.

THE ANDAMAN ISLANDS.

THE tragic fate of Lord Mayo, our Indian Pro-Consul, whilst enjoying the full measure of a well-earned and honourable reputation, will hereafter invest the scene of his untimely death with a painful and sinister interest that always surrounds the theatre of startling crimes.

The Andaman Islands, the scene of this catastrophe, lie about a hundred leagues off the Coast of Tenasserim. They bear about south south west from Point Negrais, about 160 miles distant. The Great Andaman extends about 125 miles nearly north and south, with breadth varying from 5 to 16 miles. Strictly speaking, the Great Andaman is formed by three islands distinguished as North, Middle, and South. The two latter are separated by a strait averaging a quarter of a mile in breadth, and extending twelve miles north-west and south-east. It has a considerable depth of water all through, but the eastern entrance, owing to the presence of a bar, has only a depth of one and a half fathoms. The two former are separated by a labyrinth of narrow canals running through the swamps, but there is no distinct passage or strait, of which the existence is indicated in former charts. The highest land wherever seen is in the eastern, and gradually descends towards the western shore. The water shed is therefore chiefly towards the west, and consequently it is on that side of the island that marshy localities most abound. The highest elevation is the Saddle Mountain, on North Andaman, which attains an elevation of rather more than 3,000 feet. The hills throughout the Island are covered from their summit to their base with luxuriant vegetation; they include bamboos, palms, and rattans, as well as timber trees. The whole of the shores are skirted by a reef of corals, on which breakers foam during the rise of the tide. Between high and low water marks there exists in some places a swampy mass formed by a large number of yellow and flesh-coloured carnosus sponges, covering the coral reefs and exhaling a disagreeable smell in the neighbourhood. These reefs are peculiarly perilous to vessels in their vicinity during the violent hurricanes that occasionally sweep across the Bay of Bengal. The Little Andaman island is in latitude about $10^{\circ} 50'$ north. The longitude of the Andamans is between 92° and 98° east.

From their situation and appearance, these islands had long been considered by navigators as possessing no importance; they were, therefore, little known or attended to by our eastern rulers. Pulo Penang, at the end of the last century, had been given by the King of Quida to Mr. Light, and by him to the East India Company; and a settlement had

been recently established there, when Commodore Cornwallis, with the squadron under his command, arrived in India. Shortly after his arrival the harbour of this new settlement and that of the Great Andaman were minutely surveyed by order of the Supreme Government. During this survey, Port Cornwallis, situated on the eastern side, was discovered to be a noble, capacious harbour, with most excellent anchorage and apparently every climatic advantage. A settlement in consequence was made in the year 1792, but owing to the expectations formed at the outset not being realised, and the position having proved very unhealthy, it was abandoned a few years afterwards.

The islands remained unoccupied until events occurred in India which placed a large number of the Sepoy mutineers upon the hands of the Government. This led to the appointment of a Commission to examine the Andaman Group, with a view to the selection of a site for the establishment of a penal settlement, for the reception, in the first instance, of mutineers, deserters, and rebels; and eventually, for all convicts under sentence of transportation. The Commission left Calcutta on 23rd November, 1857, in the *Semiramis* for Moulmein, whence they proceeded in the *Pluto* to the Andamans, arriving there on the 11th December. With a view of avoiding any difficulty that might arise, Captain Mann was instructed to retake formal possession of the group. The party, properly armed and equipped, anchored at Port Cornwallis, and commenced, by personal examination, to ascertain the causes of its extreme unhealthiness, and to guide them to other localities likely to possess sites suitable for the purpose required. The place appeared to have undergone no material change since its former abandonment. There was the same magnificent harbour, but it was apparent how ill-selected the site had been for a settlement, two-thirds of its own shore being fringed with a dense belt of mangrove; and the prevailing winds during the greater part of the year, at its most unhealthy season, blowing over the swamp surrounding the island. Conditions more certainly calculated to secure the largest measure of unhealthiness it would be difficult to find. Having examined the coast, they steered to the southward, and being only a few miles from Barren Island, they resolved to explore the volcano there. Some of the party ascended the cone, and saw the crater still smouldering from a recent eruption. On the morning of the 19th December the expedition anchored abreast of Chatham Island, in Old Harbour, the site of Lieut. Blair's settlement in 1789; and as its original occupation had proved continuously healthy, four days were devoted to a very careful exploration of the islands in and at the mouth of the harbour, and of the adjacent mainland. The minute and excellent survey made by Lieut. Blair in 1789 was found to be a

most useful and trustworthy guide to the chief physical features of the place. From thence the Commission steered to the southward in search of other eligible localities, but eventually they came to the conclusion that Old Harbour was the only place that possessed the requisite advantages for a penal settlement, and they accordingly recommended its occupation for that purpose. They also suggested, in honour of the distinguished officer who had surveyed it on the former occasion, that instead of being called Old Harbour, it should hereafter be named Port Blair.

Very recent explorations made by Mr. Kurz, of the Royal Botanical Gardens, Calcutta, have been the means of affording information respecting the physical features of the South Andaman and adjacent islands, which are by far the most important part of the group. The geological formations appear identical with the Aracan Coast; a broad strip of an indurated chloritic rock, rather felspathic in character, runs through the interior. It is of a greenish colour, scarcely stratified, but intersected by veins of quartz and calcareous spar; but no veins of metal were observed during any of the excursions. The next rock, which covers a large area, is a grey sandstone, which decomposes easily, and forms in general a good clay soil. At the Middle Straits, Mr. Kurz observed signs which he thought indicated a sinking tendency in these islands, by the presence of the stumps of sunken trees, and changes of the soil through the formation of the mangrove swamps. Almost at a level with the sea, and perfectly free from corals, long and broad flat fields of sandstone-layers stretch out in several places. These are submerged during tide, and separate the coral reefs from the rocky coast, which, in other places, is immediately fringed by the reefs. An examination of the corals and millipores might be expected to throw some light upon this theory. The depth at which certain corals live being known, the question of upheaval or submersion could be elucidated more conclusively by a geologist than by a botanist. But, supposing the immersion to be one foot in a century, in a thousand years all the stores and houses along the beach at Ross Island would become submerged, while Middle Straits, and many harbours now dangerous, would be open for navigation.

Mr. Kurz, during his stay, was enabled to ascertain that the rainy season commenced about the 10th of May, when the thermometer stood sometimes as low as 78° towards the morning, rising at midday to 80° and 81° . In June the rains became heavier, and thunderstorms were frequent at all hours of the day. During the latter half of these months the heat was at the greatest, the thermometer indicating a mean height of 80.7° in the morning, 83.7° at midday, and 81.1° in the evening. The first half of July the heavy rains ceased, and several fine but cloudy days alternated with rainy ones. This weather was reported to continue

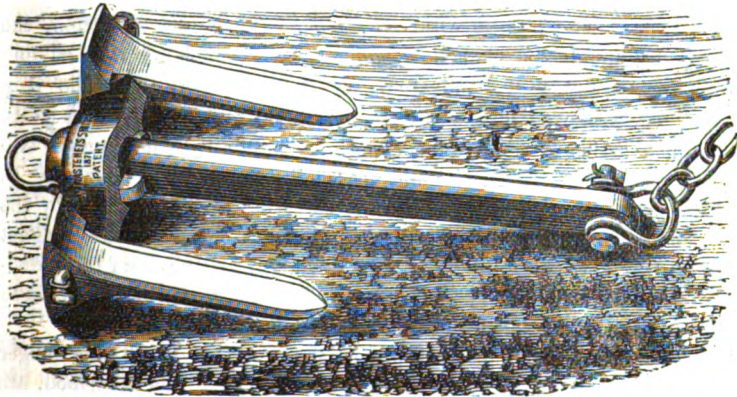
till the latter half of December, when the rains became lighter, though they occurred from time to time even in January and February, thus making the dry season to comprise only four months. It was, however, stated that where clearings have been effected, the commencement of the rains had been retarded for nearly half a month.

Owing to the great variety of soil and formation, there is accordingly a corresponding diversity of vegetation in these islands. When sailing along the eastern coasts of South Andaman, the mainland appears like a series of low hills, nowhere higher than 1,200 feet, and covered with dense lofty forests. All the trees show straight stems, with an average height of 100 feet, and often entirely covered by climbing plants, which hang from their summits in gigantic festoons. Mangrove swamps fringe all the little bays and straits, with here and there clumps of trees that attain a considerable height, and give a strange character to the whole vegetation. Behind these are the evergreen forests, where the Kuppalee-tree is the most conspicuous object. It grows straight upwards, and attains a height of 80 feet, with a clean stem ranging from 40 to 50 feet. The girth is on the average 12 to 14 feet, although in some cases even 19 feet is attained. The preservation of these forests appears highly desirable, since the wood can be used advantageously for railways, machinery, &c., where great durability and strength are required. It is also interesting to notice how the camps of the aborigines are nearly always situated where the Kuppalee is abundant, or, in other words, where the land is most level and fertile. From general observation, the Burmans were found to be the people best acquainted with the flora, but they are by no means equal to the Andamanese in accuracy and certainty of determination. While the former were obliged continually to cut into the bark to recognise the trees, the latter readily gave their names, and moreover their statements could be relied upon. These explorations were limited to the coast, for Mr. Kurz, when on the point of entering the interior, was seized by the Burmese convicts whom the superintendent of the prison at Port Blair had given him to assist in his work, and he was left tied up hand and foot in the jungles, which circumstance leads to the supposition that serious negligence existed on the part of the authorities—a negligence attended with fatal results in the case of the late and much-lamented Lord Mayo.

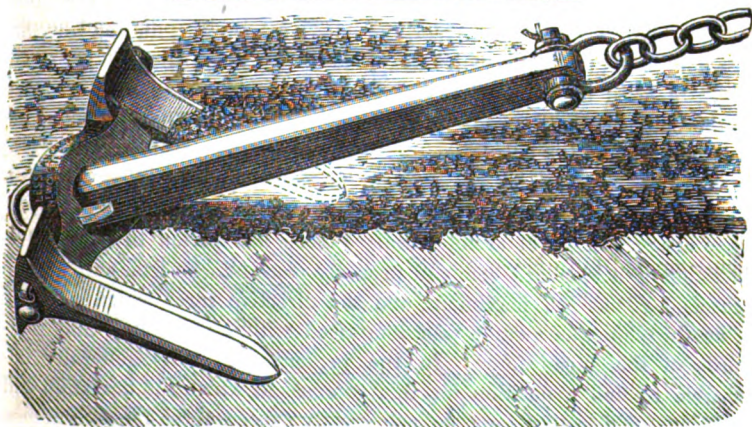
SMITH'S STOCKLESS ANCHOR.

We present our readers this month with two illustrations of a new anchor. According to a report we have received it appears that :—

“This anchor has been tested on the sea-beach against a double-armed anchor with a stock of same weight, the trial proved that the ‘STOCKLESS’ ANCHOR had not only much greater holding power, but was more steady than the other. It got full hold in little more than its own length, and the arms never stuck fast, while those of the other had at each trial to be forced into the ground, the sand having completely locked them fast.”



Before taking hold.



Holding.

We pronounce no opinion of our own on the merits of this new anchor, but we insert drawings of it in common with other drawings from time to time, so that our readers may be kept informed of inventions and improvements in connexion with ships and tackle.

CAPTAIN EVANS, R.N., F.R.S., ON COMPASS DEVIATION.

We are enabled to lay before our readers the completion of the *resumé* of the lecture on the "Present state of our knowledge respecting the Magnetism of Iron Ships, and the treatment of their Compasses," commenced in our last number, pp. 235-239.

In treating of the mechanical correction of compass deviation, the lecturer explained that the now universally adopted method of mechanically correcting the deviations of the compass, with the ship upright, was proposed by the Astronomer Royal more than thirty years ago, after a series of remarkable experiments and investigations on two of the earliest built iron merchant vessels.* The method consisting as is well known in correcting the semi-circular deviation produced by the ship's polar magnetic force by the application of permanent magnet bars; and in correcting the quadrantal deviation arising from the induction in the soft iron of the ship by the earth's horizontal magnetic force by the application of soft iron in masses of diverse shapes.

The diversity of opinion that previously prevailed as to the danger incurred in the employment of permanent magnets as thus described, are explained by the lecturer as having been of late years, from extended observation and research, very much narrowed; and, although erroneous opinions still exist on the subject, they are confined to a limited few, and will doubtless pass away with the spread of sound knowledge.

The general question of the mechanical correction of the deviation of the compass has, on other grounds, also materially changed its aspect in late years, arising from the vast increase in the employment of iron in the interior as well as the exterior fabric of the iron ship. Ships of the Mercantile Marine, no less than ships of war, have been affected by these changes in naval architecture. Before this period of change, the deviation of a standard compass properly placed in an iron ship seldom exceeded 20° at the maximum, and the directive force which acted on it, as the ship was swung, was comprised within two-thirds and four-thirds of the mean force. In the present day, it is generally impossible to find a position for this compass at which the deviation and variations of directive force do not greatly exceed these limits. Hence the change in the conditions experienced has produced a corresponding

* *Rainbow steam ship and Ironsides sailing vessel, 1838-9.*

change in the practice of the Royal Navy, magnet correction being now absolutely necessary in nearly every war ship afloat.

It is considered that the question may be here naturally asked why the practice of compass correction, which is now considered efficacious and secure, should, in the early period of the iron ship's history, have been deemed untrustworthy and, indeed, dangerous? The reply, in the lecturer's opinion, is not difficult; the magnetic conditions of the few ships of the Royal Navy at that period did not, as a matter of necessity, require magnetic correction—their compass deviations rarely, if ever, exceeded 20° —tabular corrections were readily obtained and gave ample security. The practice of compass correction was thus confined to the Mercantile Marine; the process, as recommended by the Astronomer Royal, and generally adopted as being a purely tentative one, was easily carried out in practice, and involved little or no knowledge of principles; it soon became a branch of ordinary trade business in connection with compass manufacture, and the professional "compass adjuster" became established at all our chief mercantile ports.

The practice of furnishing the seaman at the same time with a table of residual errors was not at this period adopted, or its necessity recognised, but on the faith of the professional adjuster the compass was considered correct. It was further a prevailing custom at that time to use the steering or binnacle compass for the navigation of the ship; this compass was frequently placed in the after part of the vessel near such vertical masses as the stern-post and rudder, and not more than two feet above the beams; large and irregular deviations were thus sure to obtain, requiring to be corrected by large and powerful magnets. The result was that the slightest change in the magnetism of the ship produced a large compass error; and, not unfrequently in foreign-going ships proceeding to the southern hemisphere, on reaching the latitude of the Cape of Good Hope the compass was entirely useless, from the induced magnetism of the rudder and other adjoining masses then acting in unison with those correcting magnets which originally at the port of departure had been purposely placed to act in direct antagonism.

This indiscriminate use, or rather abuse, of the method of correction by magnets was certainly not intended or contemplated by the Astronomer Royal when he gave the seaman the issue of his valuable labours; but the prejudices arising from the numerous recorded failures, the result of an ignorant application of a sound scientific principle, operated for many years against a proper spirit of inquiry into the causes of failure.

The valuable labours of the Liverpool Compass Committee—a Committee formed to inquire into the general question of the magnetism of iron ships, and the correction of their compasses—commencing from the

year 1855, with their three Reports dated in 1856, 1857, and 1861, in reference to magnet correction, are commented on, as also the results of the investigations made by the lecturer himself of the deviations of the compasses in the iron-built ships of the Royal Navy, which results were conclusive as to the security of magnet correction for a compass placed with due care, were also in unison with the experiences of the Liverpool Compass Committee, and gave confidence when the changes in naval architecture necessitated its employment.

With reference to the treatment of an iron ship's compasses, the numerous patent specifications, extending back to the year 1766, were summarised: the liquid compass, patented first in 1818, is distinguished as a real gain to the seaman, but the rapidly multiplied patents since the year 1850 are not favourably reviewed, those especially relating to the "prevention or cutting off the local attraction" evincing the neglect of the fundamental law that the interposition of a body between the magnet and the needle on which it acts can as little intercept the action of the magnet as the interposition of a body between the earth and another body would intercept the action of the gravitation of the earth.

Passing from patented inventions to the adaptations suggested by progress in scientific research, the Admiralty Standard Compass, which resulted from the labours of a Committee of well-known names in magnetic science working at the request of the Admiralty between the years 1837 and 1842, is brought under review. This compass embodies many sound and elegant improvements; there is, for example, the application of pure copper of substantial thickness for the bowl as being the metal next to silver known as the best conductor of electricity for quieting the vibrations of the magnetic needle—an application mainly due to the late Snow Harris. The needles are constructed on such a system as will afford the greatest directive power with little weight, the product of the researches of Kater, Christie, and Scoresby. The pivots and caps, an all-important detail of the compass, are constructed of such materials and in such forms as had stood the best test in an extended series of experiments made by the late Captain E. Johnson, R.N. And, lastly, the arrangement of the needles on the card are on an investigated plan which, acting mechanically, prevents the "wabbling" of the card, and, magnetically considered, permits correcting magnets and soft iron correctors being placed much nearer the compass than can be safely done with a single needle card, and the large deviations of iron ships thus far more accurately corrected.

Before passing from the subject of compass needles, the lecturer decried the employment of those large compasses fitted with needles of extraordinary length, which in modern practice appears to be considered suitable to ships of extraordinary size. These large compasses

commend themselves to navigators from the facility afforded of steering a course to degrees, instead of the old-fashioned quarter or half-quarter points, and for a certain steadiness due in one sense to the extreme slowness of oscillation in long needles as compared with short ones. In the lecturer's opinion there are fallacies and insecurity attending their use, borne out by facts coming within his own knowledge of fine and well-equipped steam ships, navigated apparently with precision and care—the course being ostentatiously steered to degrees—and still running ashore in the finest weather in some unlooked-for manner.

With reference to these large compasses it is explained that small magnet bars are proportionably much more powerful than large magnet bars, and that beyond a certain limit an increase in the length of the magnet bar is not accompanied by an increase of directive power in the same proportion, and that with long needles the increased weight of the card and appendages produce an amount of friction that far exceeds the increase of directive force derived from the added length of magnet bar; the friction being further operated on at a disadvantage from the sluggishness of movement incidental to the long needle.

In the opinion of the lecturer, the Admiralty standard card ($7\frac{1}{2}$ inches) is as large as should be used for the purposes of navigation as distinguished from a steering or auxiliary compass; and that as regards safety in the long, steady, and fast ship of modern days, the choice is really between the Admiralty card and a smaller one.

The lecturer having now passed in review the chief points deserving of attention connected with his subject, alluded to an incident which at one time had created much discussion in the United Service Institution—namely, the “depolarising” or “demagnetising” process of the late Mr. Evan Hopkins, for rendering correcting magnets or deviation tables unnecessary by destroying the polarity acquired while the ship is building, and which was applied to H.M.S. *Northumberland* in 1866-67. The incident he did not wish to allude to as one of progress in applied magnetic science, but on account of the proposal having been revived with a vigour of announcement and assertion of practical utility scarcely surpassed by the clear but sanguine original projector.

The lecturer had already, in a paper read before the Royal Society and published in their “Transactions,” given opinions adverse to the proposal, and also the numerical data on which those opinions were based, of which the following extracts were read:—

The observations prove “that the process (which, departing from the terms of the patent specification, resolved itself ultimately into rubbing the beams and iron stanchions near the compasses with powerful electromagnets) is not one of general demagnetisation, but of practical counter-

magnetisation of very variable intensity, necessarily very unstable, and producing wherever effective a rapidly varying field of force."

"That so far from the process being in any sense of the word one of 'depolarisation,' either of the whole ship, or any part of it, it was, on the contrary, the 'polarisation' to a high degree of intensity of a particular portion of the iron in the neighbourhood of three of the compasses." That "the iron so magnetised was iron capable of receiving only sub-permanent magnetism, and which from its forming part of the structure of the vessel was subject to strains and concussions from which detached magnets are wholly free. The magnetism so communicated was, therefore, necessarily unstable and transient, and from its liability to change suddenly and unexpectedly, was a source of danger to the vessel."

The concluding part of the lecture directed attention to the extension of our knowledge on the matters treated in it. Foreign nations interested in maritime affairs have unhesitatingly adopted the principles and the practice of the Royal Navy, their hand-books being all based on the Admiralty Manual. The Bureau of Navigation of the United States has collected and published, in two volumes, in the interests of the "Naval Service, and indeed of all intelligent navigators," the various theoretical and practical investigations embodied in papers contributed by our countrymen from the time of Poisson's Memoir extending to the year 1869. The preface to the first volume states that "the English investigations on compass deviation, while eminently practical, have steadily advanced towards establishing a comprehensive and available theory in all that relates to this subject."

Attention is also directed to the impetus lately given by the Board of Trade, by the several examinations in the subject extended to the masters and mates of the Mercantile Marine. The lecturer had been afforded the opportunity of inspecting the examination papers of a few successful candidates for the extra certificate, and he had found them stamped by a sound practical knowledge of principles and details highly favourable to a more perfect system of compass adjustment in our merchant ships of the future.

Attention was also called to the fact as one of assurance, and of the care and skill of the navigating officers of the Royal Navy, that within the last twenty years no misadventure had happened to a British ship of war, through default of her compasses.

The lecturer, in conclusion, confidently looked forward that at no distant date magnetic science would occupy a fair share of the attention of naval officers, not only as a necessary branch of education, but as an intellectual study that carried with it an indescribable charm, and one of a high order for estimating and grasping the more secret workings of nature.

NOMINAL HORSE-POWER.

BY J. MACFARLANE GRAY, M.I.M.E. & N.A.

“NOMINAL horse-power” means “a name for the horse-power,” and no other name has so often provoked the enquiry, “What’s in a name?” Until it become law that children shall be numbered like magazines in order of their publication, it will not signify whether Tom, Dick, or Harry be the designation of any individual specimen of the *genus homo*. These are names in which we expect to find nothing, and we are not disappointed. But, the name for the horse-power of an engine ought not to be in the category of meaningless words, for that which bears the stamp of measurement must either enlighten or deceive.

The system of measurement of nominal horse-power was introduced by Watt, and was an average representation of the actual horse-power of an engine at that time when 7lb. steam was thought high pressure. But 7 times 7 is now the average pressure, and 70 times 7 is that to which many think we are drifting. The standard of Watt is, therefore, now quite inappropriate, and the reply to “What is in it?” is, “It tells us within from 150 to 400 per cent. what is the indicated horse-power of the engine.”

A re-adjustment of the standard is at the present time a great desideratum, and examples of the shortcomings of the common rule are so well known, that I need not, to fortify my proposition, introduce here any illustrations of the anomalies in its working. The safety of passengers by ocean steamers prompts some action on the part of the Board of Trade, to ensure that the information, given in the advertisement sheets of emigrant steamers, is reliable in respect to the power of the machinery available to keep the vessel off a lee shore.

I submit the following as a scheme for the rectification of the standard nominal horse-power of marine engines and boilers:—

The source of the power being the fuel, the rate at which that can be consumed is the first element in making up the power. I have for many years been accustomed to compare the steaming power of marine boilers with the total width of furnaces simply. I have found that the tendency is towards this simple ratio, one ton of steam coals per day consumed

B B

per one foot of width of furnaces, irrespective of the length of bar. The firegrate of ocean steamers has, in many cases, been shortened from 6ft. to 5ft. with an increase of steam raising power. To all rules there are exceptions, and to this there is or was, a few years ago, a very remarkable exception. One of the Folkestone boats had bars 11ft. long, and they were well fired all along. But this which was practicable on a voyage of only two hours would be quite impossible in a voyage of days, much less weeks. Higher consumption than one ton per foot of width is quite common, but only where the boilers are originally too small for the duty required of them, and consequently the fires have to be forced to the detriment of economy.

The next element in the power is the quantity of steam raised in proportion to the weight of fuel burnt. I will assume that the boiler is properly proportioned, and make no allowance for deficiency of heating surface. The weight of steam is the weight of water evaporated, and for this may be taken as the standard of maximum practical efficiency 10lb of water evaporated by 1lb. of steam coal.

The next element is, how far will this steam go towards horse-power. At a little above atmospheric pressure, viz., at 18½lb. above zero, 85lb. of steam per hour will give one indicated horse-power if applied without loss, and without back pressure, and without expansion. The number 85 is one already appropriated by engineers for another purpose, and it will, therefore, be the more easily remembered for this.

At higher pressures, less than 35 lbs. of steam would give one-horse power indicated. At 70 lb. gross pressure it would require only 32·36 lbs. But each of these pounds would contain a little more heat and would therefore represent also a little more fuel. Evaporating from feed at 120°, the heat to be added to make 18 lb. pressure, is 1,062 units; and to make 70 lb., 1,086 units must be added. This brings us to the conclusion that the indicated horse-power at the higher pressure would require 6 per cent. less heat than the other.

But the temperature of the steam at this higher pressure would be 80° in excess of the temperature at the lower pressure. Efficiency of heating surface depends upon the difference between the temperature of the water in the boiler and the temperature of the gaseous products of combustion. The conducting power of the metal is also reduced by increase of temperature and is nearly inversely as the absolute temperature of the conducting medium. A difference of 80° will therefore make a difference of, say, also 6 per cent. on the amount of heat abstracted from a given weight of fuel.

The extension of this calculation to higher temperatures gives similar results; we may therefore assume, as being practically correct, that the

cost in fuel for one horse-power, without expansion and without loss or back pressure, is the same at whatever pressure the steam is produced. Further, we may, without appreciable error, take this cost as equal to the cost of 85 lbs. of steam produced at $18\frac{1}{2}$ lbs. pressure, and that this

will require $\frac{35}{10} = 3.5$ lbs. of fuel.

The next element is the reduction in efficiency caused by the loss of heat in blowing off where surface condensation is not used. As this loss happens to be proportional to the effect of the steam when used expansively, I will leave it to be dealt with after that effect has been calculated.

For the effect of expansion, I propose to assume that in every case the steam will expand in the cylinder to atmospheric pressure, taking that as exactly 15 lbs. on the square inch. In framing a rule for a standard such as this, we must not introduce any factor which does not exist as a definite fact. Now, the pressure of steam for which the valves are loaded is, at least in passage steamers, a quantity so fixed that it can be made available for this purpose. The degree of expansion will, therefore, be assumed to be expressed numerically by the gross pressure of steam in boiler in atmospheres of 15 lbs. Example, 60 pound steam by gauge is $\frac{60 + 15}{15} = 5$ atmospheres, and the expansion would be taken as five times.

The effect of a given quantity of steam is, by expansion, increased by the following multiplier, $10 - \frac{9}{R\frac{1}{2}}$, where R = ratio of expansion, when the steam is used without adding heat to it or abstracting heat from it. As any addition of heat would be, in general, by steam jacketing, and, therefore, would have to be drawn from the steam itself, we may apply this formula to our purpose as being nearly true, whether there is or is not a steam jacket.

This multiplier contains a radical, and, in this form, is unsuitable for the calculation of a standard nominal horse-power. As a practical approximation to this multiplier, I have constructed the following simpler rule, applicable only to expansion from two up to eight times:—

Rule: From the number 18 subtract the ratio of expansion, multiply by the ratio, divide by 40 and add .85 or

$$\frac{R(18 - R)}{40} + .85 = \text{Effect of expansion, as a multiplier.}$$

which we will write = E.

The following table shows the degree of approximation attained by this rule:—

R	...	$\left(10 - \frac{9}{R\frac{1}{3}}\right)$	...	$\left(\cdot 85 + R \frac{(18-R)}{40}\right)$
2	...	1·667	...	1·650
3	...	2·034	...	1·975
4	...	2·284	...	2·250
5	...	2·474	...	2·475
6	...	2·625	...	2·650
7	...	2·750	...	2·775
8	...	2·856	...	2·850

For steam above 120 lb. gross the formula $E = 10 - \frac{9}{R\frac{1}{3}}$ can be used.

By introducing more complicated constants, a closer approximation might have been obtained, but to do so would be objectionable.

It is requisite to have this rule in terms of pressure, the expansion being carried to atmospheric pressure = 15 lbs.

Rule: From 270 deduct the gross pressure, multiply by the gross pressure, divide by 9,000, and add ·85. Or, writing P for gross pressure—

$$\frac{P(270 - P)}{9,000} + \cdot 85 = \text{Effect of expansion, as a multiplier.}$$

But this rule takes, as yet, no notice of loss by back pressure or by radiation, or from the variations in the temperature of the surface of the cylinder. The loss by back pressure *per se* should be proportionately less as the pressure P increases. But the other losses will then be proportionately greater. When expansion is carried further than to 15 lbs., there will in general be an increased effect produced, the loss by back pressure will be proportionately more, but the external radiation will not be increased. Upon the whole, therefore, I assume as a convenient approximation not far from the truth, that, including average deficiency in boiler, the total loss of effect will be one-fourth of the evaporating power of the boiler. We have, therefore, to reduce the efficiency of fuel from 10 pounds of steam to $7\frac{1}{2}$ pounds of steam per pound of coal. Dividing 85 by 7·5 we get $4\frac{2}{3}$ lbs. of coal for an indicated horse-power, without expansion and without loss. From the ton of coal per foot of furnace front we will therefore have $\frac{2240}{24 \times 4\frac{2}{3}} = 20$ horse-power per foot of front.

I propose that this become the nominal horse-power of the boiler, 20 times the total width of furnaces in feet.

I now return to the loss by blowing off, where surface condensation is not used. Evaporating from feed water at temperature 120°, and maintaining the saltness of water in the boiler at twice that of sea water, the heat required per pound of steam made is (writing *t* for temperature)—

The latent heat	1113	-	.7 t	}	In the steam used.
Increase of temperature	- 120	+	t		
" "	- 120	+	t			in the water blown off.
	Sum		$\frac{873}{t} + 1.3t$		total expenditure.

We have therefore $\frac{t - 120}{1.8t + 873} =$ expense of blowing off in parts of the total effect of the fuel. Calculating this, we have

At pressure =	1 atmosphere	8	per cent. loss.
"	2 atmospheres	10	" "
"	3	12.5	" "
"	5	14.7	" "
"	8	16.8	" "

On referring to the table given before for the effect of expansion, it will be found that these numbers are just six times those given for the effect of expansion. In general, all new engines have surface condensers, and for these there will be no reduction for blowing off. There is, however, always some loss from this, even with surface condensers, but this, and a supposed equal amount by which in practice the blowing off, without surface condensers, will, in practice, exceed the rule I have given. I include in the one-fourth deducted for losses in general.

If we write E for the effect of expansion, we have for the effect of blowing off the salt, the multiple which we will write

$$S = \frac{100 - 6E}{100}.$$

We have now reached the engine, and the only measurement of which we can make any use is the diameter of the cylinder. The speed of the piston, the degree of expansion, the proportion between cylinders in compound engines, the size of intermediate receiver, the angle of the cranks, are all to some extent elements involved in the expression of the horse-power of the engine; but these in different engines vary so indefinitely that no standard can be based upon them. Knowing well that the engine would slip from me, I took the firmer a hold upon the boiler, so that we would be almost independent of the engine, so far as mere power of machinery is enquired after.

The rule at present adopted for nominal horse-power is 30 circular inches of piston per nominal horse-power, including all cylinders. This is the commercial nominal horse-power on the Clyde and in the north of England. It represents the horse-power of 7lbs. effective pressure per square inch, and a speed of piston 200 feet per minute.

But on the Thames the nominal horse-power is taken at the same pressure 7lbs. and at the speed of piston contracted for. Eighteen or twenty circular inches of piston, sometimes less, is there a nominal horse-power.

I propose, as nominal horse-power of engine, ten circular inches of piston area, counting only the low pressure pistons in compound engines. This corresponds with 800 feet piston speed, and 14 pounds pressure effective.

The high pressure cylinders do not add to the power of the engine. A horse is no higher because you have used a stepping-stone to get on his back; the stone is not added to the height of the horse. So with the compound engine; the high pressure cylinder is only a stepping-stone dividing the work to be done, but not adding to it. To include all the cylinders may or may not be a convenience in the buying and selling of engines, but in a rule for horse-power it introduces confusion, and I apprehend that, even commercially, the high pressure cylinders have no more claim to be included than the surface condensers, or any other adjunct distinguishing a type of engine.

As nominal indicated horse-power, I propose to add together the nominal horse-power of the boiler and the nominal horse-power of the engine. That is, $N.I.H.P. = \frac{D^2}{10} + 20 F$, where D^2 is the sum of the squares of the diameters of the cylinders, and where there is surface condensation. When there is not surface condensation the pressure will seldom exceed 80 pound steam by guage, and I therefore, neglecting the pressure, write $N.I.H.P. = \frac{D^2}{10} + 17\frac{1}{2} F$, were there is jet condensation.

This rule will run to be nearly equal to taking the speed of piston at 800ft., and the effective pressure at 28lbs. per square inch. This pressure is high, but 800 is now a low speed, and as the rule is not expected to be the true measure of power, but only an understood and convenient standard of reference, its position, a good deal above the old school and a little below the new practice, may be found a suitable one.

But I have also given a rule for nominal expansion horse-power. I propose that this should differ from nominal horse-power of engine, and take notice of the pressure to which the safety valves are loaded. I do not think it necessary that all of these should be established as rules, but I have brought them forward under distinct names to show the different ways in which we might work out the required improvement in nominal horse-power. In applying the rule for nominal expansion horse-power, I propose to alter the value of P in the proportion that the nominal horse-power of the engine is greater or less than that of the boiler. The reduction for blow off will also be made on the altered P for convenience in working out the calculation, and also because that by doing so we slightly increase the effect when the degree of expansion is reduced and decrease the effect when the degree of expansion is unduly

increased. When there is not surface condensation, there is not this compensating element in the rule. But it will generally be found that where surface condensation is used, the engines will be fitted with steam jackets and other adjuncts which will maintain the efficiency nearly equal to that given by the rule when the engines are larger, and will not be so much required, although still costing nearly as much when the engines are smaller. Therefore, the diminished loss by back pressure is in a measure counterbalanced by the greater proportional cost of jacketting and other adjuncts. I therefore think, that, without erring in a great degree, we may throughout apply the rule as for a constant proportion of loss.

The following condensed statement of these rules and explanation of the letters and examples will make clearer what has been discussed in this paper :—

D^2 = Sum of squares of diameters of cylinders—(do not include the high-pressure cylinders of compounds).

F = Sum of widths of furnaces in feet.

$\frac{D^2}{10}$ = Nominal horse-power of engine.

$20F$ = Nominal horse-power of boiler.

$\frac{D^2}{10} + 20F$ = Nominal indicated horse-power with surface condensation.

$\frac{D^2}{10} + 17\frac{1}{2} F$ = Do. do. do. with jet condensation.

To illustrate these rules, take a pair of surface-condensing engines, 72" cylinders, with boilers having 76 ft. total width of furnaces.

$$D^2 = 72 \times 72 \times 2 = 10368.$$

$$\text{Nominal horse-power of engines} = \frac{D^2}{10} = 1036.8$$

$$\text{Nominal horse-power of boilers} = 20 \times 76 = 1520$$

$$\text{Nominal indicated horse-power} = 2556.8$$

Again, take two sets of compound engines, low-pressure cylinders 78 inches, boiler having 72 ft. total width of furnaces.

$$D^2 = 78 \times 78 \times 2 = 12168.$$

$$\text{Nominal horse-power of engines} = \frac{D^2}{10} = 1216.8$$

$$\text{Nominal horse-power of boilers} = 20 \times 72 = 1440$$

$$\text{Nominal indicated horse-power} = 2656.8$$

These results agree very closely with what is the average indicated horse-power in engines corresponding to these dimensions, and I think

they satisfy almost every condition essential for a system of nominal horse-power of marine engines. The calculation is simple, the data are fixed quantities generally known, and the results agree fairly with average practice. Further, the present nominal horse-power can be easily transferred into the above.

The other part of my paper is written in reply to those who may seek a rule that will take notice of pressure and expansion. If it is thought desirable to include these as elements in the calculation, the following are the rules I offer:—

D^2 and F are used as above.

P = Gross pressure on safety valve, including atmosphere = 15lbs.

$$p = \frac{D^2}{200F}P$$

E = Effect of expansion as a multiplier, and is the "Nominal Steam Co-efficient."

$$E = p \frac{(270 - p)}{9000} + .85$$

S = Proportion of evaporative power of fuel available, after deducting for the blowing off the salt, when there is not a surface condenser.

$$S = \frac{100 - 6E}{100}$$

Nominal expansion horse-power = $20 F E$, with surface condensation.

" " " = $20 F S E$, with jet condenser.

Take the same examples as before, two cylinders 72"; total furnace width = 76ft.; steam, 40lb., with surface condensers.

$$P = 40 + 15 = 55$$

$$p = \frac{D^2}{200 F}P = \frac{72 \times 72 \times 2}{200 \times 76} \times 55 = 37.5$$

$$E = p \frac{(270 - p)}{9000} \times .85 = \frac{37.5 (270 - 37.5)}{9000} \times .85 = 1.8187$$

This represents the nominal steam co-efficient, and $4\frac{2}{3}$ divided by this will give the nominal consumption per indicated horse-power—viz., $\frac{4.666}{1.8187} = 2.561b.$ per hour.

$$\text{Nominal expansion horse-power, or N.E.H.P.} = 20 \times 76 \times 1.8187 = 2764.$$

And if with jet condensation, it would be this multiplied by S :

$$S = 100 - \frac{(6 \times 1.8187)}{100} = .891$$

$$\text{N.E.H.P.} = 2764 \times .891 = 2463.$$

Try now the compound engine, the same as before, 78in. cylinders, 72ft. of furnace width, steam 60lb.

$$P = 60 + 15 = 75$$

$$p = \frac{D^2}{200 F} P = \frac{78 \times 78 \times 2}{200 \times 72} \times 75 = 63 \cdot 4$$

$$E = \frac{p(270 - p)}{9000} + \cdot 85 = \frac{63 \cdot 4(270 - 63 \cdot 4)}{9000} + \cdot 85 = 2 \cdot 30$$

This is the nominal steam co-efficient, and $4\frac{2}{3}$ divided by 2·3 gives 2·024lbs., the nominal consumption per indicated horse-power per hour. Nominal expansion horse-power or N.E.H.P. = $20 \times 72 \times 2 \cdot 3 = 3312$.

These results 2764 and 3312 agree very closely with the *maximum* indicated horse-power of engines having these dimensions. I have not referred at all to non-condensing engines. When the rule for the others has been finally fixed, it will be easy to make a modification of it applicable to non-condensing engines with a blast draught.

In conclusion, I beg leave to state that I offer what I have written on this subject as a contribution towards a settlement of the question—not as the settlement itself. I shall be glad if by the publication of this paper others of more ability are induced to take this matter in hand, and by their influence secure the general adoption of reasonable rules for nominal horse-power.

VARIATION OF THE COMPASS, 1872.

BRITISH ISLES.

THE following information respecting the variation of the compass in the British Isles and adjacent seas is published in order—1st. To apprise mariners of the decrease of the variation, which, in the last fifteen years, has amounted to about one quarter of a point, and at present averages nine to ten minutes annually. 2ndly. To enable mariners, chart makers, and agents for the sale of charts, to correct the numerous charts and sailing directions now in use, which have the variation incorrectly marked.

From Shetland, the Orkneys, and Hebrides, to the Northern coasts of France between Calais and Ushant, the present general direction of the lines of equal variation is S.S.W. and N.N.E. (true) ranging in amount from 18° to 26° westerly.

EASTERN COAST.

At Lerwick and Sumburgh Head	...	...	...	22 $\frac{3}{4}$ °	W.
Pentland and Moray Firths...	...	...	...	23 $\frac{1}{4}$ °	„
Buchanness and Fifeness	...	...	...	22 $\frac{1}{4}$ °	„
Holy and Farn Islands	...	...	...	21 $\frac{3}{8}$ °	„
Shields, Sunderland, and Hartlepool	...	...	...	21 $\frac{1}{4}$ °	„
Flamborough Head...	...	...	...	20 $\frac{1}{4}$ °	„
The Wash and Dudgeon	...	...	...	19 $\frac{3}{4}$ °	„
Leman and Ower, Yarmouth and Orfordness	...	...	...	19°	„
River-Thames	...	...	...	19 $\frac{1}{4}$ °	„

SOUTHERN COASTS.

At North and South Forelands and Dungeness	...	...	...	19°	W.
Beachy Head	...	...	...	19 $\frac{1}{4}$ °	„
St. Catherine's, Isle of Wight	...	...	...	20°	„
Bill of Portland	...	...	...	20 $\frac{1}{2}$ °	„
Start Point	...	...	...	21°	„
Lizard Point	...	...	...	21 $\frac{3}{4}$ °	„
Scilly Islands	...	...	...	22 $\frac{1}{4}$ °	„
Cork Harbour	...	...	...	24°	„
Cape Clear	...	...	...	24 $\frac{1}{2}$ °	„

WESTERN COASTS.

At Valentia and the Blasquets	...	...	...	25 $\frac{1}{2}$ °	W.
Arran Islands	...	...	...	25 $\frac{1}{2}$ °	„
Achil Head	...	...	...	26 $\frac{1}{8}$ °	„
Tory Island	...	...	...	25 $\frac{1}{2}$ °	„
Innistrahul Lighthouse	...	...	...	24 $\frac{3}{4}$ °	„
Skerryvore Lighthouse	...	...	...	25 $\frac{1}{4}$ °	„
Barra Head	...	...	...	26°	„
Butt of Lewis	...	...	...	25 $\frac{3}{4}$ °	„

NORTHERN COASTS.

At the Minch and Little Minch	...	...	...	25 $\frac{1}{2}$ °	W.
Cape Wrath	...	...	...	24 $\frac{3}{4}$ °	„
Thurso	...	...	...	23 $\frac{3}{4}$ °	„
North Ronaldsha, Orkneys	...	...	...	23 $\frac{1}{4}$ °	„
Foula Island, Shetland	...	...	...	23 $\frac{1}{4}$ °	„
Unst Island, Shetland	...	...	...	22 $\frac{1}{2}$ °	„

IRISH SEA AND BRISTOL CHANNEL.

At Mull of Cantire	...	...	...	...	24 ° W.
Mull of Galloway	...	...	...	...	23 $\frac{1}{4}$ ° „
Isle of Man	...	...	...	...	22 $\frac{3}{4}$ ° „
Liverpool	...	...	...	...	21 $\frac{3}{4}$ ° „
Holyhead	...	...	...	...	22 $\frac{1}{2}$ ° „
Dublin	...	...	...	...	23 $\frac{1}{2}$ ° „
Smalls Lighthouse	...	...	...	...	22 $\frac{1}{2}$ ° „
Tuskar Lighthouse	...	...	...	...	23 ° „
Lundy Island	...	...	...	...	22 ° „
Bristol	...	...	...	...	21 ° „

NORTHERN COAST OF FRANCE.

At Calais	...	...	...	...	18 $\frac{1}{2}$ ° W.
Havre	...	...	...	...	19 ° „
Cape Barfleur	...	...	...	...	19 $\frac{3}{4}$ ° „
Jersey	...	...	...	...	20 ° „
Casquets, Alderney, and Guernsey	...	...	...	...	20 $\frac{1}{4}$ ° „
Ushant	...	...	...	...	21 ° „

NORTH AND BALTIC SEAS.

The decrease in the variation of the compass in the North and Baltic Seas at present averages 9 minutes annually—in the North Sea, and in the Baltic Sea about 10 minutes.

From the Eastern coast of the British Isles to the Kattegat, the present general direction of the lines of equal variation is N. by E. and S. by W. (true), ranging in amount from 22° to 18°; and from the Kattegat to the Gulf of Finland, the lines of equal variation are nearly North and South (true), ranging from 18° to 2° Westerly.

EASTERN COAST OF BRITISH ISLES.

At Lerwick and Sumburgh Head	...	...	...	...	22 $\frac{3}{4}$ ° W.
Pentland and Moray Firths	...	...	...	...	23 $\frac{1}{2}$ ° „
Buchanness and Fifeness	...	...	...	...	22 $\frac{1}{4}$ ° „
Holy and Farn Islands	...	...	...	...	21 $\frac{2}{3}$ ° „
Shields, Sunderland, and Hartlepool	...	...	...	...	21 $\frac{1}{4}$ ° „
Flamborough Head	...	...	...	...	20 $\frac{1}{4}$ ° „
The Wash and Dudgeon	...	...	...	...	19 $\frac{3}{4}$ ° „
Leman and Ower, Yarmouth and Orfordness	...	...	...	...	19 ° „
River Thames	...	...	...	...	19 $\frac{1}{4}$ ° „

COASTS OF BELGIUM, NETHERLANDS, HANOVER, AND WESTERN SHORES
OF DENMARK.

At Ostende	...	...	...	...	18 ° W.
River Schelde entrances and Texel	...	...	...	...	17 $\frac{1}{3}$ ° „
Ems River and Hantsholmen Light	...	...	...	...	15 $\frac{3}{4}$ ° „
Helgoland Island	...	...	...	...	15 $\frac{3}{4}$ ° „
Elbe River entrances, Cuxhaven and Tonning	...	...	...	...	15 $\frac{1}{4}$ ° „

S.W. AND SOUTH COASTS OF NORWAY, AND THE SKAGERRAK.

At Fens Fiord, to Bucke Fiord	...	...	...	...	19° to 18 ° W.
Eggersund	...	...	...	...	17 $\frac{3}{4}$ ° „
Naze of Norway	...	...	...	...	17 ° „
Christiansand	...	...	...	...	16 $\frac{1}{2}$ ° „
Christiania, Bohus Bay, or the Sleeve and Skaw Light	...	...	...	...	14 $\frac{3}{4}$ ° „

KATEGAT, LITTLE AND GREAT BELTS, AND THE SOUND.

At Læso Island	...	...	...	...	14 ° W.
Gottenburg and Anholt Island	...	...	...	...	13 $\frac{1}{2}$ ° „
Little Belt and Kiel	...	...	...	...	14 $\frac{1}{4}$ ° „
Great Belt and Lubeck	...	...	...	...	13 $\frac{3}{4}$ ° „
Copenhagen and the Sound	...	...	...	...	18 ° „
Bornholm Island	...	...	...	...	11 $\frac{1}{2}$ ° „

COASTS OF SWEDEN.

At Carlskrona	...	...	...	...	11 ° W.
Öland Island and Nyköping	...	...	...	...	10 $\frac{1}{2}$ ° „
Landsort Light and Stockholm	...	...	...	...	9 $\frac{3}{4}$ ° „
Soderam and Understen Lights	...	...	...	...	9 ° „
Gothland, South Point	...	...	...	...	9 $\frac{1}{2}$ ° „
Farö and Gottska Sando	...	...	...	...	9 ° „

COASTS OF PRUSSIA.

At Rugen Island	...	...	...	...	12 $\frac{1}{4}$ ° W.
Stettin	...	...	...	...	11 $\frac{1}{2}$ ° „
Jershoff Light	...	...	...	...	10 $\frac{3}{4}$ ° „
Danzig	...	...	...	...	9 $\frac{3}{4}$ ° „
Königsberg	...	...	...	...	8 $\frac{1}{4}$ ° „
Memel	...	...	...	...	7 $\frac{3}{4}$ ° „

COASTS OF COURLAND AND LIVONIA.

At Entrance to Gulf of Riga	7 ° W.
Riga... ..	6 $\frac{1}{4}$ ° „
At West Coast of Osel and Dago Islands ...	7 $\frac{1}{2}$ ° „

GULF OF FINLAND.

At Hango Head and Odensholm Light ...	6 $\frac{3}{4}$ ° W.
Helsingfors and Revel	5 $\frac{1}{4}$ ° „
Hogland Island	4 $\frac{1}{4}$ ° „
Kronstat	2 $\frac{1}{2}$ ° „
St. Petersburg	2 ° „

GULF OF BOTHNIA.

At Åland Islands	8 $\frac{1}{2}$ ° W.
Söderhamn	10 $\frac{1}{3}$ ° „
Umeå	8 $\frac{1}{2}$ ° „
Bjurö Head	7 $\frac{1}{2}$ ° „
Tornea and Brahestad	5 $\frac{1}{4}$ ° „
Gadd, and Norr Skär Lights	7 $\frac{3}{4}$ ° „
Wasa, Björneborg, and Nystad	7 $\frac{1}{4}$ ° „

CORRESPONDENCE.

THE following letter is from a very indulgent firm of British shipowners. We purposely omit names and dates. It fully bears out what we say in our leader, that to prevent British shipowners from obtaining the services of competent and willing foreigners would be to perpetrate a gross injustice:—

To the Editor of the Nautical Magazine.

“MY DEAR SIR,

“Annexed extracts are from letters by one of our most intelligent and kind shipmasters. We consider our ships manned better than most ships, as we take every care by extra pay for good conduct, &c., to retain as well as obtain good men; yet look at the result—the badness of our men is beyond all question.—Yours sincerely,

A. B. & C.”

Extract of letter from Captain ———, of ship ———, dated Calcutta, February, 1872.

“I have had altogether a very indifferent crew, never without a sick man, and sometimes as many as four laid down; the men which I thought the best turned out the worst, but being mostly Germans and Swedes, they are very willing and respectful, and notwithstanding their shortcomings, infinitely superior to our British sailors.”

Extract of letter dated Calcutta, February, 1872.

“I have been working our engine and the main hatch with our crew, and coolies at the after-hatch, but the coolies with baskets beat the sailors by several hundred maunds daily; but if the British seamen would work the same as the Germans and Swedes, the crew would beat them by far; but my British tars have gradually dropped off, shamming sick, until now they (and they only) to their disgrace are all on the sick list, and the Germans and Swedes doing double duty. Notwithstanding all the kindnesses and encouragements given to the British merchant seamen in foreign trades, both by owners and the Government, they do not appreciate it; they take no interest whatever in the welfare of the ship, for the benefit of those from whom they get their bread, and, taking them generally, are an unprincipled, insubordinate, and degraded class; there are great numbers of them now ashore here, and it is seldom you meet one of them but he is half drunk, half clad, or miserably disfigured, and sometimes all these, with a little extra work, and smart officers, a British sailor is bound to be insubordinate, shams sick, or wants to leave the ship. I have now five on the sick list, all British, and I do not believe one of them to be really ill, but have what we call the salt fever—a little hard work knocks them over.”

To the Editor of the Nautical Magazine.

DEAR SIR,

Having read your article in this month's *Nautical Magazine* on “Sailors Homes and Boarding Masters,” perhaps you will allow me to say a few words on the subject.

I entirely agree with what you say as to the advisability of carrying on the proposal to license respectable men in London and other ports to supply seamen, as, after several years experience in Singapore, I have found the plan work admirably, and am only surprised it has not been more generally adopted in England. If it had, I would not so often have heard masters of vessels, arriving in Singapore from English ports—

especially some of the coal ports—complain of the medely and inefficient crews they so often have to put up with, giving them very much trouble and annoyance in various ways. In Singapore, a certain limited number of men are licensed to supply seamen. Before their licenses are granted, their characters are carefully ascertained through the police and other quarters. One of the conditions of the license is, that they attend at the shipping office daily, for a certain number of hours, for the convenience of captains of ships requiring sailors. Another condition is, that any misconduct on their part, at once makes them liable to lose their licenses. These men are, of course, boarding masters, and therefore seamen who may not wish to go to the Sailor's Home, naturally prefer them (who can reshipe them) to other boarding masters who have not the same privilege, and who incur the risk of heavy penalties if they break the law on this point.

I should like to say a few words on some other points connected with the shipping of seamen for the Mercantile Marine, but must not trespass further on your valuable space.

Yours faithfully,

W. BURN,

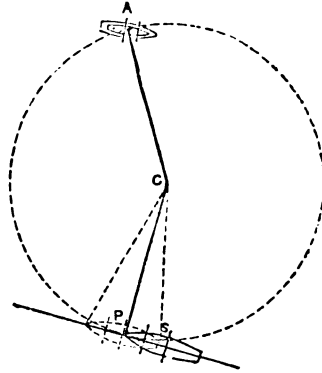
Master Attendant, Shipping Master, &c., &c.,
Singapore.

London, 11th March, 1872.

To the Editor of the Nautical Magazine.

SIR,

If it be agreeable to you, I should be glad to contribute towards clearing up a question which "An Engineer" appears to have addressed to you some time back (in November). It is that of the position of a ship which is in the act of circling with her helm hard over. It is important that officers who wish at some future day to give an opponent the stem should have a clear notion of the exact movements of their ship, and I will endeavour to express them in a popular manner. If, to represent those movements, we construct a figure, we shall see that a ship (s) moving round a point (c) and propelled by steam, would, at any point (p), be travelling (for the moment) on the tangent to the circle ormed about c (rejecting a small correction). If it were not so, and if the bow and stern were at any moment equidistant from c, as the dotted ship in the diagram, then that ship would necessarily increase her distance from c directly she moved. The manner in which she travels is as follows:—Let a be the ship. She is acted on by influences, which may be, for the convenience of the present illustration, divided into the



momentum which she possessed up to the last unit of time, and that imparted by the action of the propeller at any moment, and constantly in a fresh direction. If the ship's engines were stopped at any moment, the helm being kept hard over a-port, the movement would be a compound of the force last exerted by the propeller and the resistance of the water. But if the propeller be continued in movement, we have a force continually acting in a fresh direction, and giving a movement in the direction of the keel. The result is, the ship occupies a position of which that at A is an exaggeration, viz. : She travels on a circle passing before the centre of her keel, and the line of her keel is a tangent to a smaller circle at a point near the stem, and varying according to speed and angle of helm.

Yours faithfully,

JAMES C. GOODENOUGH, Com. R.N.

Paris, February 20th, 1872.

ANSWERS TO CORRESPONDENTS.

J. B. H., GOOLE.—Looking to the fact that the space under the light-deck, of which you have sent us plans and particulars, is intended to be used for the carriage of cargo, we think that under the tonnage rules it is liable to admeasurement. There are, however, several somewhat similar cases pending before the Courts at Westminster and Edinburgh, and we would advise you not to go on, if you are in doubt, until those cases are decided. The case of the *Danzig* is not a case in point.

T. O., CARDIFF.—As the other vessel's red light was seen on your starboard side, we think you would be wrong in risking an action at law.

WAGGA-WAGGA.—If, as you say, the flat surfaces in the boiler are fitted with stays, on which the strain in no case exceeds 5,000 lbs. to the inch of sectional area, do not put in any more stays until you have appealed to the Marine Department of the Board of Trade.

SOCIETIES, MEETINGS, &c.

ROYAL GEOGRAPHICAL SOCIETY, March 11th, 1872.—Major-General Sir

H. C. Rawlinson, K.C.B., President, in the chair.

THE papers read were :—" A Visit to Kej, and Journey from Gwadar to Kurrachee," by Major E. C. Ross ; and " Survey of the Perso-Kelât Frontier," by Captain Beresford Lovett. The President said that the papers related to a portion of Asia which was of great and increasing interest to Englishmen, both geographically and politically. Lying between Persia and the western frontier of our Indian Empire, it was through the district explored by Major Ross that the line of electric telegraph now runs by which we communicate with our Indian Possessions ; and a remarkable valley, or trough, between the mountains parallel to the sea-coast of Mekran, no less than 250 miles in length, was the route along which the future direct railway to India would probably traverse Beloochistan. Major Ross's narrative commenced at Gwadar, on the coast, whence he proceeded inland to Kej, through the Dusht district, and across the parallel mountain ranges. He then proceeded eastwardly to Bela, and thence southerly to Sonmeanee and Kurrachee. Much interesting information was gleaned during the journey, concerning the ethnology, language and ancient history of the region. The inhabitants belonged to the Aryan race, and their language resembled ancient Persian, rather than the modern polished form of that idiom.

In the discussion which followed, and in which Sir Bartle Frere, Colonel Malcolm Green (late Political Resident in Kelât), Mr. Gifford Palgrave, Mr. T. Saunders, and the President took part, it was stated that the long narrow valley of Kej was the route by which Alexander the Great's army returned from the Indus to the Persian Gulf ; and it was this line also that the Arabs followed in their invasion of Scinde. Sir Bartle Frere remarked, that date-groves are distributed in a scattered manner, generally in lines, over the country ; and that the inhabitants have a legend explaining their growth by the circumstance that the soldiers of Alexander cast away the seeds of the dates they ate from day to day during their march. The only previous information we had regarding the interior of the country was that gleaned by Pottinger and Grant in 1810 and 1811, two officers who were deputed by Sir John Malcolm, special envoy to the Shah of Persia, to examine the country.

c c

METEOROLOGICAL OFFICE.

The Meteorological Office has commenced the issue of Lithographed Charts, illustrative of the Daily Weather Report. The rates of subscription, payable in advance, for the Charts, are, 10s. per quarter for a copy to be delivered by hand, in London, before two p.m.; 5s. per quarter for a copy sent by book-post. The Committee reserve to themselves the right of declining to supply copies by hand, on the ground of distance. In our desire to keep our subscribers *au courant*, we append for their inspection a full-sized specimen of one of the new Charts.

ROYAL NATIONAL LIFEBOAT INSTITUTION.

A meeting of this Institution was held at its house, John Street, Adelphi, on Thursday, 7th March. The gold medal of the Institution was unanimously voted to Sir Edward Perrott, V.P., in acknowledgment of the great services which he had rendered to the life-boat cause during the past twenty years as chairman of the preparatory committees of the society. Rewards amounting to £165 were granted to the crews of different life-boats of the Institution for recent services. New life-boats have recently been sent to Sunderland, Tynemouth, and Howth. The annual meeting of the Institution is to be held on Monday, the 8th of April, at the Mansion House, by the permission of the Lord Mayor: and his Royal Highness the Duke of Edinburgh, K.G., has promised to take the chair.

BOOKS RECEIVED.

“Jurisprudence du Conseil des Prises, pendant la Guerre de 1870-1871,” par Henri Barboux. London and Paris: Henry Sotheran; Joseph Baer and Co., 1872. “Marina e Commercio, Giornale di Economia e Scienze Marittime.” Fiume, February, 1872. “Our Mercantile Marine. Ships and Sailors.” By an ex-Officer. Published by Arthur Rothery; Congleton.* “Protoplasmic Life.” By Dr. Crace Calvert, F.R.S., Royal Institution, Manchester. Reprinted from the “Journal of the Royal College of Chemistry.”* “Treatise on the Practice of Navigation.” W. C. Bergen. London: Laurie, 1872. “A Petermann’s Geographische Mittheilungen, Recent Polar Explorations.”*

* These are under review.

MONTHLY ABSTRACT OF NAUTICAL NOTICES.

No.	PLACE.	SUBJECT.
65	WEST INDIES—Colombia—Port Savanilla	Establishment of a Light.
66	BAY OF FUNDY—New Brunswick—South Wolf Island.	Establishment of a Light.
67	JAPAN—Sinlonosekj Strait—Rockuren Island	Establishment of a Light.
68	RIVER PLATE ENTRANCE—Cape Santa Maria	Establishment of a Light.
69	AFRICA—South East Coast—St. John River	Discovery of a Rock near.
70	PATAGONIA—West Coast	Discovery of dangers.
71	WEST INDIES—Colombia—Cartagena Harbour	Buoyage of Shoals.
72	ADRIATIC—Port Pirano	Establishment of a Light.
73	„ Port Quisto	Establishment of a Light.
74	„ Fasana Harbour	Establishment of a Light.
75	MEDITERRANEAN—Spain—Marbella	Alteration in Light.
76	DARDANELLES	Alteration in position and Lights of Coast Guard Ship.
77	ADRIATIC—Curzola Channel—Lusnae Bank	Erection of a Beacon.
78	GULF OF BOTHNIA—Oregrund Bay	Intended Light Vessel.
79	„ Finngrund Light vessel	Alteration in position.
80	„ Skags Harbour Light	Exhibition of the Light.
81	„ Rodkallan Bode	On the completion of Lighthouse and Exhibition of Light.
82	BALTIC—Oland Island—Kappel Point	On the completion of Lighthouse and Exhibition of Light.
83	„ Kalmar Sund—Demman Shoal	New Lighthouse and temporary Light Vessel.
84	„ Gotthland—Närsholmen	Erection of a Lighthouse.
85	„ Hano Bight—Carlshamn	Establishment of a Harbour Light.
86	THE SOUND—Hveen Island	Additional particulars of Light.
87	KATTEGAT—Warburg Harbour	Additional particulars of Light.
88	BALTIC—Pomerania—Stolpemunde	Establishment of a Light.
89	JAPAN—Inland Sea—Isaki	Establishment of a Light.
90	JAVA—Baly Strait—Tabuan (Pigeon) Island	Establishment of a Light.
91	„ Samarang	Establishment of a Harbour Light.
92	„ Boompjees Islands—Bakkit	Establishment of a Light.

NAUTICAL NOTICES.

65.—WEST INDIES.—*Colombia.*—*Port Savanilla.*—A temporary *fixed white light*, preparatory to the establishment of a permanent light, is now exhibited (it is believed) on Nisparel Point, as a guide to the anchorage. The light is exhibited from a white tower, and visible between the bearings S.E. $\frac{3}{4}$ S. by east to N.N.E. $\frac{2}{3}$ E., 58 feet above the sea, and should be seen 10 miles. The shoal head of the Culebra bank, with 10 or 12 feet water on it, bears west over $1\frac{1}{2}$ miles from the lighthouse. There is from 6 to 7 fathoms water close to this shoal ground. *Note.*—This light will shortly be changed to a 5th order fixed light, varied by flashes. A white beacon, 14 feet high, has also been erected on the south-west point of Verde island. *Directions.*—Vessels, before proceeding eastward of Morro Hermoso, should bring the light to bear E. by N. $\frac{3}{4}$ N., and steer in on that course, and when in 5 or $4\frac{3}{4}$ fathoms, bring the light to bear E. $\frac{1}{4}$ N., and anchor in the same depth of water, muddy bottom. Hard sand bottom on the north side, and gravel or shell on the south side, indicate approach of shoaler water. The south side of the bay of Savanilla should not be approached within $4\frac{1}{2}$ fathoms. A rock, with 18 feet water on it, has also been discovered about three-quarters of a mile W. $\frac{1}{2}$ N. from Morro Hermoso, with 7 and 8 fathoms around it.

66.—BAY OF FUNDY.—*South Wolf Island.*—A *revolving white light*, attaining its greatest brilliancy *every one and a half minutes*, elevated 111 feet above the sea, is now exhibited; in clear weather it should be seen 18 miles. The lighthouse, 35 feet high, is situated on the south-east point of the island in lat. $44^{\circ} 56' \frac{1}{2}''$ N., long. $66^{\circ} 44' 10''$ W.

67.—JAPAN.—*Simonoseki Strait.*—*Rockuren Island.*—A *fixed white light* of the fourth order, visible from S.E. $\frac{3}{4}$ S., round by south and west to N. by E. $\frac{1}{2}$ E., elevated 89 feet, and in clear weather seen 12 miles, is exhibited on the easternmost extreme of the island in lat. $33^{\circ} 59' 15''$ N., long. $130^{\circ} 52' 25''$ E. The light when first seen from the northward bearing S.E. $\frac{3}{4}$ S. leads half a mile from the shallow ground north of Ai-sima.

68.—RIVER PLATE ENTRANCE.—*Cape Santa Maria.*—A *revolving white light*, attaining its greatest brilliancy *every minute*, has been established; it is 120 feet above the sea, and in clear weather should be seen 16 miles. Position, lat. $34^{\circ} 40' \frac{1}{2}''$ S., long. $54^{\circ} 9'$ W.

69.—AFRICA.—*South-East Coast.*—*St. John River.*—A sunken rock (*Bismarck rock*) has been discovered near St. John River in the usual

track of vessels between Algoa Bay and Port Natal. It lies three-quarters of a mile from the shore, and $2\frac{1}{2}$ miles east from Cape Hermes. The rock has 12 feet water on it, and there is a deep channel between it and the shore.

70.—PATAGONIA.—*West Coast.*—The two following dangers have been discovered—viz.: A sunken rock on which, with a sea running, the water broke occasionally. Approximate position, lat. $51^{\circ} 11' S.$, long. $75^{\circ} 85' W.$ A reef of rocks (*Cordillera reef*), just awash, on which the sea was breaking heavily. Approximate position, lat. $50^{\circ} 58' S.$, long. $75^{\circ} 84' W.$ *Note.*—Mariners navigating this part of the West Coast of South America are cautioned that the coasts and the off-lying dangers between Magellan Strait and the Gulf of Peñas have not been closely examined, and that the charts are necessarily imperfect; therefore, too close an approach to this dangerous and inhospitable shore is not advisable.

71.—WEST INDIES.—*Colombia.*—*Cartagena Harbour.*—Buoys have been placed at the entrance to and within the harbour in lieu of the posts which have hitherto indicated the channel. The following system in the arrangement of the buoys has been adopted, viz.:—The buoys on the starboard hand going in are painted *red*, and numbered with even numbers, 2, 4, 6, &c. The buoys on the port hand going in are painted *black*, and numbered with odd numbers, 1, 3, 5, &c. The above buoys are numbered progressively from 1 to 18, beginning at Boca Chica. The buoys on middle, or isolated, shoals which have a channel on either side are painted *black* and *red*, and not numbered. All the buoys are moored in from 4 to 5 fathoms water. Three buoys are moored outside the Boca Chica, viz.:—Two *black*, Nos. 1 and 3, on the edge of the shoal water on the north side of the entrance, and one *red* buoy, No. 2, on the south side, off Baru island. Ten buoys are moored in the outer harbour, viz.:—Five *black*, Nos. 5, 7, 9, 11, and 13; four *red*, Nos. 4, 6, 8, 10; and one *black* and *red*. Five buoys, viz., two *black*, Nos. 15 and 17, three *red*, Nos. 14, 16, and 18, and one *black* and *red*, mark the entrance to the inner harbour or anchorage.

72.—ADRIATIC.—*Port Pirano.*—A *fixed red* light of the fifth order, 33 feet above the sea, and visible nine miles, is exhibited from the bastion on Point Pirano (Point Madonna della Salute).

73.—ADRIATIC.—*Port Quieto.*—*Dente Point.*—A *fixed and flashing white* light, with flashes *every three minutes*, preceded and followed by a short eclipse, 41 feet above the sea, and visible 12 miles is now exhibited on Dente point. It is obscured in the direction of the shoal outside Cioran, or from the bearing N.N.E. towards the shore, and in

the direction of the Secca del Val, between the bearings S.S.E. $\frac{1}{4}$ E. and S.E. $\frac{1}{4}$ S., clearing the shoals on each bearing in 20 feet water. Position, lat. $45^{\circ} 18' N.$, long. $13^{\circ} 34' E.$

74.—ADRIATIC.—*Fasana Harbour*.—A fixed white light, 22 feet above the sea, and visible 8 miles, is exhibited from a post at the end of the jetty. Position, lat. $11^{\circ} 28' N.$, long. $13^{\circ} 48' E.$

75.—MEDITERRANEAN.—*Spain*.—*Marbella*.—Only one fixed red light is exhibited at the extremity of the iron mole; it is elevated 80 feet, and should be seen 8 miles.

76.—DARDANELLES.—The vessel to which all merchant ships passing the Dardanelles have to deliver their firmans, has been moved from Galata Bournou, and is now moored near the opposite shore of Lamp-saco. The vessel is painted yellow, and at night, instead of three lights placed vertically, as heretofore, exhibits a red light at the mast, and a white light at both ends of a horizontal yard.

77.—ADRIATIC.—*Curzola Channel*.—*Lusnae Bank*.—A beacon to mark this bank (which has only 5 feet water on it) is in the course of erection, and is now $4\frac{1}{2}$ feet above water.

78.—GULF OF BOTHNIA.—*Oregrund Bay*.—In the course of the present year a light-vessel, exhibiting a white light, will be placed in the northern part of Oregrund Bay, in lat. $60^{\circ} 27\frac{1}{2}' N.$, long. $18^{\circ} 17' E.$ At the same time the above light is exhibited the Diursten light, on Gräsö, will be altered to show a red sector in a north and north-westerly direction.

79.—GULF OF BOTHNIA.—*Finngrund Light-vessel*.—During the present year, the East Finngrund light-vessel will be moved two miles to the northward of her present position, or to lat. $61^{\circ} 0' 30'' N.$, long. $18^{\circ} 30' E.$

80.—GULF OF BOTHNIA.—*Skags Harbour*.—The light on Graklubb Island is now exhibited. The light is a flashing white light, showing a flash of ten to fifteen seconds duration, followed by an eclipse of forty-five or fifty seconds; it is 71 feet above the sea, and should be seen 12 miles. The tower is 57 feet high, and painted chequered red and white; the keeper's house is painted red. Position, as given, lat. $63^{\circ} 11' 50'' N.$, long. $19^{\circ} 2' 40'' E.$ Note.—The light is not seen eastward of North.

81.—GULF OF BOTHNIA.—*Rodkallan Rode*.—The lighthouse will be completed in the present year, and it is expected the light will be exhibited in September. Position, lat. $65^{\circ} 19' 20'' N.$, long. $22^{\circ} 28' 10'' E.$

82.—BALTIC.—*Oland Island*.—*Kappel Point*.—The tower will be completed during the present year, and a flashing light is expected to be exhibited therefrom in September. Position, as given, lat. $56^{\circ} 49' 20'' N.$, long. $16^{\circ} 50' 40'' E.$

83.—**BALTIC.**—*Kalmar Sund.*—*Demman Shoal.*—During the present year the erection of a lighthouse will be commenced on Demman shoal, in Kalmar Sund, in lat. $57^{\circ} 8' 40''$ N., long. $46^{\circ} 40' 30''$ E. During the progress of the works a vessel will be stationed near, she will carry a red ball by day, and exhibit a white light by night.

84.—**BALTIC.**—*Gottland.*—*Närsholmen.*—During the present year a lighthouse will be erected on Närsholmen, S.E. coast of Gottland, which will exhibit a flashing light. Position, as given, lat. $57^{\circ} 14'$ N., long. $18^{\circ} 44'$ E.

85.—**BALTIC.**—*Hanö Bight.*—*Carlshamn.*—A light has been established at Carlshamn as a leading light into the harbour. The light is a fixed white light, visible between the bearings N. $\frac{1}{2}$ W. and N. $\frac{3}{4}$ W.; it should be seen 8 miles. Position as given, lat. $56^{\circ} 10'$ N., long. $14^{\circ} 52' 20''$ E. *Directions.*—Vessels entering the harbour should sight the light, and steer for it until near the town.

86.—**THE SOUND.**—*Hveen Island Light.*—*Additional Particulars.*—The light is a flashing white light, of fourth order, showing a flash every ten seconds, 98 feet above the sea, and should be seen 12 miles. The tower, 29 feet high, is painted white, and the keeper's dwelling, red. *Directions.*—The light is not visible westward of the bearing N. by W. $\frac{1}{2}$ W., and vessels proceeding southward should keep the light in sight until as far as Malmö, to clear the shoals off Landskrona and Barsebak point. Position, lat. $55^{\circ} 55'$ N., long. $12^{\circ} 40'$ E.

87.—**KATTEGAT.**—*Warburg Harbour.*—*Skrifvereklippen-rock Light.*—*Additional particulars.* The light is an alternating white and red flashing light (of the 3rd order), showing a flash of five to seven seconds duration, followed by an eclipse of from eighteen to twenty seconds duration. Each flash shows white for the first two to three seconds, and red for the remainder: it is 70 feet above the sea, and should be seen 12 miles, the power of the red light being increased to attain nearly the same distance of visibility as the white light. The iron tower is 54 feet high, and painted chequered red and white. Position, lat. $57^{\circ} 6'$ N., long. $12^{\circ} 18' 30''$ E.

88.—**BALTIC.**—*Pomerania.*—*Stolpemunde.*—A fixed red light, 89 feet above the sea, and visible 6 miles, is now exhibited from the Pilot watch-house at Stolpemunde, coast of Pomerania. Vessels steering for the light on a S.S.E. course will make the entrance of the harbour, but should not enter without a pilot.

89.—**JAPAN.**—*Inland Sea.*—*Isaki.*—A fixed light, of the 4th order, is now exhibited. It shows a red light from E. by S., round by south and west, to N.W. $\frac{1}{4}$ W., and white from the latter bearing to N. $\frac{1}{2}$ E. It is 122 feet above the sea, and should be seen 12 miles. The tower, 31

feet high, is on the north-east entrance of the point, in lat. $38^{\circ} 58' N.$, long. $181^{\circ} 1' E.$ *Note.*—The junction of the red and white lights, bearing N.W. $\frac{3}{4}$ W. clears the shoals off Motoyama.

90.—**JAVA.**—*Baly Strait.*—*Tabuan (Pigeon) Island.*—A lighthouse is in course of erection, from which a *fixed white* light of the 4th order will be exhibited. It will be 55 feet above the sea, and visible 15 miles. Position, lat. $8^{\circ} 2\frac{1}{2}' S.$, long. $114^{\circ} 27' E.$

91.—**JAVA.**—*Samarang.*—On the completion of the harbour works now in progress, a *fixed white* light of the 6th order, visible 8 miles, will be exhibited.

92.—**JAVA.**—*Boompjes Islands.*—*Rackit.*—A lighthouse is in course of erection, which will exhibit a *revolving white* light of the 1st order. It will be 175 feet above the sea, and should be seen 23 miles. The tower is 164 feet high. Position, lat. $5^{\circ} 54\frac{1}{2}' S.$, long. $108^{\circ} 20' E.$

CHARTS, ETC., PUBLISHED BY THE HYDROGRAPHIC OFFICE, ADMIRALTY,
IN THE MONTH OF MARCH, 1872.

Sold by J. D. POTTER, 81, Poultry, E.C.

No.	Scale.		s.	d.
805.	m = 16·5	Guadeloupe, St. Anne anchorage, and Port du Moule	1	0
2426.	m = 2·9	British Columbia, Port Simpson, and adjacent anchorages... ..	2	0
840.	m = 0·15	Nicobar islands	1	6
182.	m = 1·5	Japan, inland sea, channels between Misima Nadu and Bingo Nadu	8	0
1016.	m = 0·2	Australia, Bass strait to Gabo island	1	6

OUR OFFICIAL LOG.

GENERAL.

ST. MICHAEL AND ST. GEORGE.—The Queen has made the following appointments:—To be Ordinary Members of the Second Class, or Knights Commanders of the said Order: Charles Cooper, Esq., C.M.G., late First Minister of the Government of New South Wales, and now Agent-General in England for that Colony; George Frederick Verdon, Esq. C.B., late Treasurer of the Colony of Victoria, and now Agent-

General in England for that Colony. To be Ordinary Members of the Third Class, or Companions of the Order: William Fitzherbert, Esq., late Colonial Treasurer of the Colony of New Zealand; Julius Vogel, Esq., Colonial Treasurer and Post-Master-General for the Colony of New Zealand; Stephen Walcott, Esq., one of her Majesty's Commissioners for Colonial Land and Emigration.

MAURITIUS LABOUR COMMISSION.—The Queen has been pleased to appoint William Edward Frere and Victor Alexander Williamson, Esqs., barristers-at-law, to be her Majesty's Commissioners to enquire into the condition of the Indian labourers in the Island of Mauritius. Her Majesty has also been pleased to appoint Nicholas Darnell Davis, Esq., to be Secretary to the aforesaid Commission.

DIPLOMATIC.—The Queen has been graciously pleased to appoint Mr. Francis Ottiwell Adams, now Secretary to her Majesty's Legation in Japan, to be Secretary to her Majesty's Embassy at Berlin.

BRITISH HOSPITAL DUES AT CONSTANTINOPLE AND SMYRNA.—The Board of Trade has received a notice respecting British Hospital Dues at Constantinople and Smyrna, to the effect that from and after the 1st of October, 1871, the undermentioned dues will be levied:—For the Seamen's Hospital at Constantinople, 1d. per ton; for the Seamen's Hospital at Smyrna, 1½d. per ton. In neither case is a second payment to be levied on the same vessel within a period of four calendar months.

GUANO.—STRAITS OF MAGELLAN AND TIERRA DEL FUEGO, AND ISLANDS AND COASTS ADJOINING THERETO.—The Minister from Chili in the United Kingdom desires to make it known to all to whom it may concern, that the Republic of Chili has exercised from time to time immemorial, and now exercises, its jurisdiction and domination over the afore-mentioned islands and coasts, and this more especially since the month of September of the year 1843, when his Government established and settled a colony in the Straits of Magellan, the seat of which colony is at present in Punta Arenas, on the coast of Patagonia. The Chilian Minister further informs all whom it may concern that it is forbidden to any vessel of whatever nationality, under penalty of being forfeited, together with the cargo, to approach or anchor at or near said islands and coasts. The notice is dated at the Chilian Legation in Great Britain, 13th day of March, 1872.

ABYSSINIAN DONATION BATTA.—INDIA OFFICE.—Notice is given that rolls have been received of the shares, unclaimed in India, of donation batta, for services in Abyssinia, by her Majesty's steamers *Coromandel*, *Dalhousie*, *Sir John Lawrence*, *Earl Canning*, *Lord Elphinstone*, *May Frere*, *Scind*, and *Semiramis*; steam tugs *Rustom*, *Spitfire*, and *Pehlwan*; steam barge *Clare*; schooner *Constance*; and ship *Hydrabad*. Applica-

tions must be addressed to the Military Secretary, India Office, Westminster, S. W. Service papers, or other documents to establish identity, will be required.

SPAIN.—BALLAST DUTY.—The Board of Trade have received a copy of a despatch from Her Majesty's Minister at Madrid, reporting that the Spanish Government have abolished the municipal tax of eight reals per ton on ballast taken from the beach imposed at Villa Nueva y Geltru, and stating that the provisions of the order apply to all other ports of Spain.

QUARANTINE NOTICES.

SPAIN.—The Board of Trade have received, from the Secretary of State for Foreign Affairs, copies of notices of the Spanish Government, stating that vessels which have sailed from Reval after the 26th ultimo will on their arrival in Spanish ports be sent to a foul lazarette, and that vessels which have left Fernando Po subsequently to the 9th December will be considered clean, subject to the conditions described in the 40th reformed Article of the Health Laws.—A note addressed by the Spanish Government to Her Majesty's Minister at Madrid, states that vessels which have left Constantinople subsequently to the 23rd ult. will be admitted to free pratique in Spanish ports, if, counting from that day, they have fulfilled the 40th reformed Article of the Health Law. The note further states that orders have been issued for the exercise of the most vigilant care with regard to vessels from Amsterdam, Philadelphia, Tunis, Copenhagen, Milford Haven, and Newport, in consequence of the appearance of small-pox at those ports.—By an order from the health authorities, dated yesterday, in *Diario* of this day, the ports of the Danube, which were considered by order of December 19th last as infected with cholera morbus, are declared suspected of same disease from February 10.—The Board of Trade have received a copy of a despatch from her Majesty's Minister at Madrid, reporting that, in consequence of the appearance of yellow fever at Pernambuco, the Spanish Government have ordered the imposition of rigorous quarantine on vessels which have sailed from that port since the 12th ult.—The following orders have been issued by the Health Authorities: Of February 28th, in *Diario* of 29th, declaring transferred from the qualification of "infected" to that of "suspected" of cholera morbus, from 16th February, all the ports of the Black Sea and the coasts of Syria and Constantinople and Salonica; and declaring "free from said disease, and from the said date, all the other ports of Turkey." Of March 1, in *Diario* of 2nd, declaring the ports of the Regency of Tripoli, in Barbary, "free from cholera morbus from February 16."

PORTUGAL.—Copies of notices issued by the Portuguese Government, declaring the Port of Pernambuco infected with yellow fever since the 31st December last, and the ports of Prussia in the Baltic, and Rotterdam, free from cholera morbus.—Portuguese notices have been received declaring North Parahiba infected with yellow fever, and Para free from the same disease since 20th December last.

GREECE.—The five days' quarantine maintained at Greek ports, on arrival from Constantinople and Salonica, was suppressed on the 5th inst., and the Greek authorities now admit to free pratique vessels from all the ports of Russia and the Ottoman Empire, with the exception of St. Jean d'Acre; and a further despatch abolishing quarantine on vessels arriving from St. Jean d'Acre.

TRINIDAD.—The Governor of Trinidad reports that in consequence of the prevalence of cholera at Halifax, Nova Scotia, he had on the 6th ult. declared that port to be an infected place, and that vessels coming therefrom would accordingly be subjected to quarantine.

ITALY.—The Italian Government admit to free pratique, on their arrival in Italian ports, vessels which have left Constantinople and its vicinity, Galatz, and all ports on the shores of the Danube, on or after the 1st inst., and the coast of Syria and the Island of Cyprus since the 5th inst., with clean bills of health, and no cases of cholera having occurred during the voyage. A further decree revokes the ordinance of the 26th of September last, as regards vessels which have left Turkish ports between the Black Sea and the Mediterranean since the 1st inst., arriving under similar conditions.—The Board of Trade have received a copy of a despatch from the British Vice-Consul at Rhodes, reporting the suppression of quarantine on arrivals at that port from Constantinople since the 21st ult.

CUSTOMS.

COSTA RICA.—FIRE-ARMS.—The Board of Trade have received a copy of a despatch from her Majesty's Consul at San José, reporting that by a decree of the 8rd of January last, the duty on the importation of fire-arms into Costa Rica was fixed at the rate of \$5 per pound, and on ammunition for the same at \$1 50c per pound.

SPAIN.—The Board of Trade have received a copy of a decree of the Spanish Government, amplifying the habilitation of the Custom-house of San Felix de Guixols for the importation from abroad of sulphur, sulphuric acid, hemp (raw and dressed), spun flax, hemp, and jute, iron and steel in bars, plates, pigs, wire and tubes, such woods as are included in Group 1 of Class 9 of the Tariff, petroleum, salt and rags.—The Board

of Trade have received from the Secretary of State for Foreign Affairs copies of three decrees of the Spanish Government, relating to Custom-house arrangements. The first provides for the habilitation, from the 1st March next, of all the Custom-houses of the first class, both inland and on the coast, for the dispatch of incoming and outgoing foreign merchandise in transit by the ordinary roads. The second permits the transit of tobacco, the produce of and proceeding from the Philippines, subject to the conditions laid down in Art. 6, Appendix No. 20, of the Customs ordinances, the certificate of which the same Article treats, being issued, however, by the Custom-house of exit. The third abolishes the certificates hitherto required to prove the origin of coffee, spirits, and sugar imported directly from the Spanish West Indian possessions and the Philippines, and renders this certificate obligatory for all other colonial produce from the 1st March next.—The Board of Trade have received a copy of a decree of the Spanish Government, dated the 25th ultimo, conceding habilitation to the Custom-house of Alcantara for the importation and exportation of every class of merchandise by the River Tagus, in the same manner that it is habilitated for trade by land.

MARITIME LAW.

BREACH OF CONTRACT.—EXCHEQUER CHAMBER, Feb. 1.—SITTINGS IN ERROR.—On appeal from a decision of the Court of Exchequer, in an action on a mercantile contract, it appeared that the plaintiff, the vendor, had contracted to ship in Norway and deliver at any port in the United Kingdom a cargo of ice to the defendant, the purchaser, who undertook, on receiving the bills of lading, to take upon himself the risks and dangers of the seas, and to buy the ice on its arrival, paying for it by weight and weighing it on delivery. The ship and cargo were lost, and the vendor, who had delivered bills of lading and relied upon the purchaser's agreement to take upon himself the risks of the seas, sued for damages. The Court below having decided in favour of the defendant, the plaintiff appealed. The Court of Exchequer Chamber were of opinion that under the contract, the property passed on receipt of the bills of lading, and that the purchaser took the risk. Judgment for the plaintiff.

BREACH OF THE FOREIGN ENLISTMENT ACT.—"THE GAUNTLET."—JUDICIAL COMMITTEE OF THE PRIVY COUNCIL, Feb. 20.—This was an appeal by the Crown from a decision of the Court of Admiralty where the owners of the steam tug *Gauntlet* had been proceeded against at the instance of the Crown for towing the *Lord Brougham*, a German merchant vessel captured by a French cruiser during the late war, and

placed in charge of a detached prize crew into Dunkirk, in violation of the Foreign Enlistment Act. It was contended by the owners of the *Gauntlet* that she was only employed in her usual occupation of towage, and had not been engaged in the naval service of France, and the Judge (Sir R. Phillimore) dismissed the suit. Lord Justice James, in delivering the judgment of their lordships, considered that the detaching a prize crew under the command of a French naval officer, to take charge of the captured vessel, and bring her and her prisoners and booty safely home, was essentially a warlike operation, and that the sending an English steamer to take a vessel so captured and manned into French waters, was despatching a ship for the purpose of taking part in the naval service of the belligerent within the meaning, words, and spirit of the Act of Parliament. The judgment of the Court of Admiralty would, therefore, be reversed, and the *Gauntlet* forfeited to the Crown.

LOSS OF CARGO.—COURT OF QUEEN'S BENCH.—In a recent action by a shipper, against a shipowner, for causing the loss of a cargo of belmontine, described as petroleum, shipped on board a steamer, laden on her deck, in accordance with the terms of the bill of lading, which contained these words:—"The master to be at liberty to ship on deck"—and washed overboard, the shipowner set up the usual exception in bills of lading, "perils of seas." The shipper said that had he received notice that the goods were to be laden on deck, he might have protected himself by insurance, and set up a custom to give shippers notice. The Lord Chief Justice left to the jury the three following questions:—
1. Whether, under a bill of lading, with such a clause in it as this, there was a usage for the shipowner to give notice to the shipper that his goods were to be carried on deck. 2. Whether the course of dealing between the plaintiff and defendant had been such as to impose a duty on the defendant to give such notice. 3. Whether the practice was so universal to carry petroleum on deck that the plaintiff must be taken to have known it. The jury, having answered the first and second questions in the affirmative, and the third question in the negative, a verdict was entered for the plaintiff for the value of the belmontine, with leave to the defendant to move the Court to set aside the verdict.

MUTILATING AN OFFICIAL LOG.—SUNDERLAND POLICE COURT, Feb. 16.—A master was summoned under sec. 284 of the Merchant Shipping Act for mutilating the official log-book of the *Hypatia* on or about the 23rd December last. As there was no evidence to show that the defendant, who pleaded guilty, had committed the offence with any fraudulent intention, he was convicted in the mitigated penalty of £5, and costs of Court.

COLLISION.—LIVERPOOL COUNTY COURT, FEB. 10.—In an Admiralty suit arising out of a collision between the plaintiffs' steamer *Swiftsure* and the defendants' steamer *Test*, which occurred in the Dee on the 27th August, 1871, the plaintiffs claimed £30 for damages, caused, as they alleged, by the negligence of the defendants. The evidence showed that at about 9·0 p.m. on the 27th August, the night being dark and hazy, the *Swiftsure*, with excursionists from Liverpool to Chester, came into collision with and injured the *Test*, which was moored at Saltney abreast two other vessels in the fairway of the channel, without any light being exhibited. The Court were of opinion that the mooring of three vessels abreast of the width of the *Test*, in a narrow reach of a river where vessels were in the habit of passing, was an improper act, and that at tide-time or during the night there ought, if this practice were adopted, to be some means provided of warning approaching vessels. They were, therefore, of opinion, without taking into consideration the provisions of the Merchant Shipping Act Amendment Act, 1862, relating to lights, that the *Test* was guilty of negligence, and that the plaintiffs were entitled to a verdict for the sum sought to be recovered.

ANSWERS TO CORRESPONDENTS.

(From the *Shipping Gazette*, by arrangement with Sir WILLIAM MITCHELL.)

ADVANCES TO MASTERS.—In answer to questions respecting the liability of owners for advances made to their masters for ships' purposes in a foreign port, where the management of their ships and cargo is placed in the hands of regular agents or brokers, who report the ships' arrival in the newspapers, the editor of the *Shipping and Mercantile Gazette* replied that the master is the agent of the owner, in all matters connected with the ship and her disbursements, and money advanced to him in a foreign port for ship's purposes is recoverable from the owners. The publication in the ordinary way of the fact that the ship was reported by a certain broker, who subsequently chartered the ship and paid expenses, would not be notice to defeat the claim of a person who had *bonâ fide* made advances to the master on ship's account.

BROKERAGE.—A vessel on her arrival at Queenstown from the Black Sea was ordered to proceed to Liverpool, where the broker, in his bill, charged as follows, viz. :—Reporting the vessel in, £2 2s. ; clearing the vessel out, £2 2s. ; brokerage, £4 4s. The broker who chartered the vessel outwards also charged four per cent. on the freight, as agreed upon. Her master inquired whether, on settling the broker's bill, he should refuse to pay the four guineas introduced as brokerage, and was

referred to the case of "Nienbuhr v. Prichard," tried at Liverpool in April, 1868, before Mr. Justice Mellor, in which the jury held that a custom had been proved that the addressed broker should report a ship and be entitled to the reporting fee, and allowed £1 6s. on this account.—If, therefore, the ship should have been addressed, under charter-party, to the chartering brokers, and was not addressed, that broker can claim his fee, but not more than two guineas. If the ship was not addressed, the payment of the four guineas should be resisted.

COLLISION IN DOCK.—ARREST OF SHIP.—Where a steamer chartered to load a cargo of coals, the loading and unloading to be done in a stipulated number of hours, damaged another vessel in entering dock, and was ultimately arrested, the editor of *Shipping and Mercantile Gazette* considers that the time the ship was under arrest cannot be reckoned against the Charterers. The ship having caused the damage must stand to the loss.

COAL AND SODA CARGO.—The owner of a vessel chartered her with a coal merchant for £18 a keel of 21 1-5 tons coals, giving permission to the merchant to ship two or three keels goods at the same freight as the coals. The owner now claims freight on some soda, which was shipped at the rate of 16 tons to the keel, but the merchant is only willing to pay at the rate of 21 1-5 tons as with the coals. Which is right?—Sixteen tons of soda in casks are proportioned in stowage to 850 cubic feet, or one keel; and 21 tons in gross weight of soda in bulk are equal to one keel. If the freight was to be calculated on the terms of "other lawful merchandise in proportion thereto," soda should pay a higher relative rate than coals.

CRIMPAGE.—A master asks whether a merchant is entitled to deduct from freight 1d. per ton crimpage on grain cargoes, according to law or custom?—We have always advised the non-payment of crimpage. It is an extortion which should be resisted, unless the master has engaged the services of a crimp as an intermediary agent.

DAMAGE TO CARGO.—A first-class iron ship arrived at New York from Calcutta, with a cargo of jute, jute butts, linseed, &c. Every necessary precaution was taken in Calcutta to dunnage the ship before loading, and to free her from vermin, but on the discharge of the cargo several bags were found to be partially destroyed by rats, and a claim was made upon the ship for the damaged bags. Is the ship liable, or is this a peril of the seas?—It has been held by the Court of Exchequer that a shipowner is liable for damages caused by rats.

DEFICIENCY OF CARGO.—A vessel was loaded with a general cargo, and the master signed the bills of lading according to the mate's receipts.

On delivery of the cargo one case was missing. Is the mate or the ship responsible?—Bills of lading are given on mate's receipts for goods shipped. The shipowner is primarily responsible to the holder of the bill of lading for the value of the missing case; and if the mate did not keep a correct tally of the goods shipped, or negligence could be proved against him, he could be made to repay the same to the owner.

FOULING LIGHTSHIPS.—A correspondent stated that a schooner on her passage to Cardiff, in proceeding up the Bristol Channel, with light wind and thick weather, fouled the *Breaksea* lightship, carrying away her own bowsprit, cutwater, &c., and asked:—1. Is not the lightvessel supposed to have certain gong or bell soundings in dense fogs or thick rainy weather? 2. Would the schooner be bound to pay any damages sustained by the lightvessel in the collision?—He was informed:—1. That in thick weather a fog-horn or gong should be sounded from a lightvessel at intervals of not less than five minutes. 2. The master of a ship so colliding is liable to pay a penalty of £50, and the owner for damages incurred.—See the case of the *Neva*, reported *ante* page .

JETTISON.—A captain, during a voyage from London for Swansea, was obliged to throw overboard 10 tons of his cargo (pitch). The vessel was not damaged, nor did her captain claim the amount of freight of the 10 tons; but the merchant, on his own private authority, deducted from the amount of freight on the cargo delivered the entire value of the 10 tons thrown overboard. Has the merchant a right to do so?—The merchant has no right to deduct the value of the 10 tons of pitch from the freight. The jettison of the pitch appears to have been a general average act, for which ship, cargo, and freight must contribute rateably in the ordinary way.

SHORT DELIVERY OF CARGO.—A vessel loaded a cargo of barley at St. Malo, for Campbelton, the master signing a clean bill of lading. On the delivery of the cargo, the vessel turned out short of the bill of lading quantity. On the merchant settling the freight, the value of the barley short delivered was struck off. The captain and crew were willing to give their declaration that they delivered all they received on board. Is the ship liable to pay the value of the quantity short delivered, and is a merchant justified in deducting it from the freight? Also, is there any allowance for wastage?—The bill of lading is *prima facie* evidence of the shipment of the quantity of barley mentioned therein; but, according to the ruling of the Lord Chancellor, in the case of "*M'Lean v. Fleming*," decided on appeal in the House of Lords, in March, 1871, reported in the *Shipping and Mercantile Gazette*, and in which ruling Lord Chelmsford, Lord Westbury, and Lord Colonsay fully concurred,

“the bill of lading is not conclusive against the shipowner. It merely threw the burden upon him of proving how there came to be so great a discrepancy between the bills and the real cargo delivered.” The ship is not, therefore, liable to pay for the difference between bill of lading quantity and output, if it can be proved that all the cargo shipped was delivered, and the sums deducted may be recovered in law. The merchant has no right to deduct the value of the grain short delivered from the freight.—“*Meyer and others v. Dresser*,” *S. & M. G.*, May 6, 1864. There is no rule as to wastage of barley, for it usually swells.

BOARD OF TRADE INQUIRIES AT HOME.

1. *Queen of the Thames*, of London, stranded near the Cape of Good Hope, 18th March, 1871. Inquiry ordered June 2nd, 1871. Mandamus granted by the Court of Queen's Bench. Proceedings still pending.

16. *Magdala*, of Leith, stranded at Boulmer on the 17th January. Inquiry ordered 3rd February, and held at Berwick on the 20th February, before A. Smith, Esq., J.P., and A. R. Lowery, Esq., J.P., with Commander J. A. Forbes, R.N., as N.A. Improper course steered, master's certificate suspended for six months, mate blamed.

17. *Aracaty*, of Grimsby, stranded near Laurvig, Norway, 12th December, 1871. Inquiry ordered 5th February, 1872, and held at Grimsby on the 22nd February, before the Borough Magistrates and Captain Hight, and Commander Tonkin, R.N., as N.A. Navigation of ship had been conducted with gross negligence. Certificate of master suspended for six months.

18. *Macgregor Laird*, of London, stranded two miles W. by N. $\frac{1}{2}$ N. of N.W. Point, Corisco Bay, on the 13th December, 1871. Inquiry ordered 9th February, 1872, and held at Liverpool on the 22nd and 23rd February, before T. S. Raffles, Esq., S.M., and Captains Harris and Budd, as N.A. Master in default. Certificate suspended for six months.

19. *City of Halifax*, stranded in Carnarvon Bay, 13 miles S. of the Menai Straits, 30th January. Inquiry ordered 9th February, and held at Liverpool on the 20th and 21st February, before T. S. Raffles, Esq., S.M., and Captains Harris and Budd. Default of master. Certificate suspended for three months.

20. *British Prince*, of Liverpool, stranded six miles E. of North Berwick, 3rd February. Inquiry ordered 13th February, and held at Liverpool on the 24th and 26th February, before T. S. Raffles, Esq., S.M., and Captains Harris and Budd as N.A. No neglect of duty on part of master.

21. *Minnesota*, of Scarborough, stranded on the Long Sand, 3rd February. Inquiry ordered 13th February, and held at Newcastle on the 24th and 26th February, before Messrs. Milvain and Hammond, and Captain Hight and Commander Tonkin, R.N., as N.A. Vessel lost through gross and unpardonable neglect of master. Certificate suspended for twelve months.

22. *Frances*, of London, stranded near Dimlington, 12th February. Inquiry ordered 29th February. Proceedings pending.

23. *Amazon*, of Liverpool, boiler burst and four men killed, at Bordeaux, on the 30th January. Inquiry ordered 4th March. Proceedings pending.

24. *Shamrock*, of Whitby, stranded near Cushenden, county Antrim, 13th February. Inquiry ordered 6th March, and held at Whitby, on the 14th and 15th March, before C. Richardson, Esq., J.P., and A. W. English, Esq., J.P., with Captain Harris and Commander J. F. Prowse, R.N., as N.A. Vessel lost through default of master. Certificate suspended for three months.

INQUIRIES ABROAD.

14. *Jessie Forrest*, of Liverpool, stranded on Lagos Bar, 25th January, 1872. Inquiry held at Lagos, before J. H. Glover, E. Guichard, and J. F. Pike, Esqrs. Loss was in consequence of mismanagement of the pilot, and his certificate was suspended for three months.

15. *Loch Levan*, stranded on King's Island, 24th October, 1871. Inquiry held before the Melbourne Steam Navigation Board. Loss attributed to neglect of master, who was subsequently drowned.

16. *Robert Fletcher*, of Sunderland, stranded on Long Island, February 4th. Inquiry held at the British Consulate, New York, before E. M. Archibald, Esq., H.B.M. Consul General, R. W. Grace, master of the *Spain*, of Liverpool, and W. Inglis, master of the *Black Prince*, of London. Master in default. Certificate suspended for six months.

17. *Kalodyne*, stranded on the Coast Reef, near Mapon, Mauritius, on the 15th January. Inquiry held before the Mauritius Marine Board. Vessel lost by default of master, but considering his long and meritorious conduct, they refrained from depriving him of his certificate, but considered he had laid himself open to censure, and censured him accordingly.

18. *White Rose*, of Glasgow, stranded (to prevent foundering) 10th January, 25 miles west of Cape Frio. Inquiry held at Rio de Janeiro, 11th February, 1872, before G. L. Hunt, Esq., H.B.M. Consul, Lieut. V. Jones, R.N., H.M.S. *Egmont*, and D. Edwards, master of the British vessel *South Carolina*. Court was of opinion that no error of seamanship was committed by the master, and that everything practicable was done by him to save the ship.

ROYAL NAVY AND ROYAL NAVAL RESERVE.

PROMOTIONS.

Commander—William J. L. Wharton, 1865.

Staff-Commander—George Stanley, 1861.

Lieutenants—Marchant Penfold and Joseph T. Grun, Royal Naval Reserve; John Winchester, to be Honorary Lieutenant.

Chief Engineer—William Holloway, 1861.

Surgeon—Septimus Terry, 1864.

APPOINTMENTS.

Captains—Arthur T. Thrupp, 1865, to *Valorous*; John F. Ross, 1862, to *Repulse*.

Commanders—Edmund J. Church, 1868, to *Royal Adelaide*, for *Vigilant*; Alfred Eaton, 1867, to Coast Guard; Robert B. Cay, 1866, to *Vulture*; Richard H. Napier, 1868, to *Bullfinch*; Richard S. Bateman, 1865, to *Daphne*, vice Adams, deceased; Cecil G. Sloane Stanley, 1867, to *Peterel*; Marcus A. S. Hare, 1867, to *Boscawen*; Charles P. Bushe, 1868, to Coast Guard; Cyprian A. G. Bridge, 1869, to *Cambridge*.

Lieutenants—Thomas De Hoghton, 1868, to *Vulture*; John W. Sunderland, 1867, and Robert F. Hammick, 1864, to *Repulse*; John Hayes, 1865, to *Black Prince*; Charles Campbell, 1872, to be Flag Lieutenant to Rear-Admiral Frederick A. Campbell; Wellesley Gregory, 1855, to Coast Guard; Herbert H. Edwards, 1861, to *Wizard*; Herbert F. Gye, 1866, to be Flag Lieutenant to Rear-Admiral A. Cumming, C.B.; Hon. Edward D. Needham, 1870, to *Ajincourt*; Edwin P. Statham, 1872, to *Barossa*; Frederick Walter, 1868, to *Hotspur*; William B. Forbes, 1870, to *Peterel*; Herbert C. A. Brand, 1859, to *Vanguard*; James J. L. Sisson, 1869, to *Peterel*; William H. Henderson, 1866, to *Peterel*; Lewis T. Jones, 1871, to *Clio*; Hubert H. Grenfell, 1866, and Charles G. Drury, 1868, to *Excellent*, as staff-officers; St. Vincent Nepean, 1866, to *Cambridge*, as staff-officer.

Navigating Lieutenant—Nathaniel Child, 1870, to *Peterel*.

Sub-Lieutenants—Frank H. Barnett, to *Lord Warden*; Claude Paget, to *Rapid*; Lionel H. Morris, George H. Cherry, and Richard Keown, to *Valorous*; Thomas F. Allen, to *Aurora*; Frederick P. Trench, to *Peterel*; Edward F. Creagh, John E. Meryon, Barton R. Bradford, Robert Stewart, and G. Drury, to *Glasgow*; Lord George Campbell, to *Duke of Wellington*; H. B. Sayce, to *Minotaur*, for disposal; Charles W. P. Bouverie, to *Hotspur*.

Navigating Sub-Lieutenant—Henry C. Mills, to *Sultan*.

Midshipmen—Henry C. T. Bunbury, Walter V. Anson, Henry Anketell, Henry B. Wreghton, Edward J. Bain, George F. Glennie, Hugh Talbot, Walter S. Smith, and Poynings H. M. Molyneux, to *Lord Warden*, for *Aurora*.

Chief Engineers—William F. Capps, 1862, to *Lord Clyde*, from *Doris*; Benjamin F. Pine, 1863, to *Doris*, from *Wivern*; Charles Beal, 1863, to *Simoon*; John Hill, 1870, to *Indus*, for *Hecate*.

Engineers—James Ireland, 1863, and Charles F. Halford, , to *Vulture*; Mathew McIntyre, 1866, to *Asia*, additional; Charles D. Thomas, 1865, and Walter Crichton, 1868, to *Peterel*; John Phillips, 1866, and Edwin J. Comley, 1867, to *Pembroke*, for *Glatton*.

First Class Assistant Engineers—William H. Bills, 1871, to *Vulture*; Andrew Spalding, 1870, to *Dasher*.

Second Class Engineers—Walter R. Wellington, 1869, to *Peterel*.

Chaplains—Rev. William A. Rutherford, D.D., 1864, to *Asia*; Rev. Stephen S. Browne, to *Resistance*; Rev. Edmund Cotter, 1868, to *Aurora*.

Deputy Inspector-General of Hospitals and Fleets—Richard W. Mason, C.B., 1861, to Bermuda Hospital, vice Morgan, superseded at his own request.

Staff Surgeons—John D. Macdonald, 1866, to *Vanguard*, for Netley Hospital; Samuel S. D. Wells, 1865, to *Lord Warden*; George J. Banks, 1871, to *Duke of Wellington*.

Assistant Surgeons—Richard Cannon, 1863, to *Nevens*; John F. Enright, M.D., 1871, to *Audacious*; John Tyndall, 1871, to *Achilles*.

Paymasters—George W. Anderson, 1854, to *Vanguard*; Charles J. Curgenven, 1852, to *Danaë*; Frederick W. S. Ponsonby, 1863, to be Secretary to Rear-Admiral Cumming, C.B.; George Grandilier, to *Asia* for *Favorite*; John L. Page, 1870, to *Peterel*.

Assistant Paymasters—Lewis J. Hodder, 1866, to *Penelope*; George S. Goddard, 1863, to *Indus*; George C. Townshend, 1869, to *Antelope*, in charge.

RETIREMENTS.

Captain—William R. Rolland, C.B., 1857.

Commander—Hillary M. Carré, 1869.

Lieutenants—Henry E. Croasdaile, 1870; Stephen A. Onley, 1871; Arthur L. Clarkson, 1863.

Sub-Lieutenant—Frank Russell Robinson, 1868.

Inspector General of Hospitals and Fleets—Sir David Deas, K.C.B., 1855.

Paymaster—Charles A. Thorne, 1847, as Paymaster-in-Chief.

Assistant Paymasters—Charles J. B. Hutchison, 1869; Henry Hodge, 1861; Robert J. Willis, 1867.

DEATHS.

Admiral—Sir James Scott, K.C.B., 1865 (*retired*).

Captain—Charles C. Owen, 1852 (*retired*).

Commanders—Richard Adams, 1866; Thomas Bradby, 1860 (*retired*); Stephen Hilton, 1839 (*retired*).

Navigating Lieutenant—Edward B. Darcey, 1864.

Sub-Lieutenants—William J. Talbot and William A. Jukes, drowned by the capsizing of a boat of H.M.S. *Ariadne*.

Paymaster—Joseph Bright, 1868.

CONSULAR APPOINTMENTS.

BRITISH CONSULS.—The Queen has been graciously pleased to appoint Charles John Calvert, Esq., now her Majesty's Consul at Monastir, to be her Majesty's Consul at Naples; John Elijah Blunt, Esq., now her Majesty's Vice-Consul at Adrianople, to be her Majesty's Consul at Monastir; and Walter Edward King, Esq., to be her Majesty's Vice-Consul at Kin-Kiang. The Queen has also been graciously pleased to appoint G. Glynn Petre, Esq., now Secretary to her Majesty's Embassy at Berlin, to be her Majesty's Chargé d'Affaires to the King of Wurtemberg. Also to appoint Edward Smallwood, Esq., now her Majesty's Consul in Corsica, to be her Majesty's Consul for the Azores or Western Islands, to reside at St. Michael's; and Frank Wooldridge, Esq., now British Vice-Consul at Rabat, to be her Majesty's Vice-Consul in the Island of Cayenne.

FOREIGN CONSULS.—The Queen has been pleased to approve of the following Foreign Consuls:—For his Majesty the King of the Belgians, Henri Hinnekindt, as Consul at Singapore; and for the German Empire, Mr. P. D. Martin, as Vice-Consul at Simonstown. For his

Majesty the Emperor of Austria, Mr. Nathaniel Adler as Consul at Port Elizabeth. For his Imperial Majesty the Sultan, Mr. Adolphe Le Couteur, as Consul at Jersey. For the Republic of Chili, Don E. C. Tomas as Vice-Consul at Birmingham.

WEST COAST OF AFRICA.—By an Order in Council, dated Feb. 21, 1872, it is provided as follows, viz. : “Whereas her Majesty hath by sufferance power and jurisdiction over her own subjects in the States and territories hereinafter named, and whereas it is expedient to make provision for the due and effectual exercise of such power and jurisdiction: Now, therefore, her Majesty is pleased, by and with the advice of her Privy Council, to order, and it is hereby ordered, that her Majesty’s Consul or Consuls appointed to the places hereinafter named shall have full power and authority to carry into effect and to enforce the observance of the stipulations of any Treaty, Convention, or Agreement, or of any Regulations appended to any Treaty, Convention, or Agreement now existing, or which may hereafter be made between her Majesty, her heirs, and successors, and the Chief or Chiefs of any of the territories situate upon the Old Calabar, Bonny, Cameroons, New Calabar, Brass, Opobo, Nun, and Benin Rivers, or of any part of the said territories; and to make and to enforce by fine, banishment, or imprisonment, rules and regulations for the observance of the stipulations of any such Treaty, Convention, or Agreement, and for the peace, order, and good government of her Majesty’s subjects being within the said territories.

REWARDS.

To Captain W. Symington, Master of the ship *Flying Venus*, of Liverpool, a binocular glass, for incurring risk in boarding the ship *Unrivalled*, when in a disabled state off the Cape of Good Hope, remaining by her 23 hours, and afterwards taking off her crew, 26 persons in all.

To Captain Emery Berry, master of the American barque *Lorena*, of Boston, a binocular glass, for rescuing the crew (8 in all) of the brig *Louisa*, of Swansea, from their sinking vessel. He had previously kept by her for two days in order to render aid.

To Captain J. M. Richardson, master of the American ship *Anna Decatur*, a binocular glass, for his humanity to the crew of the schooner *Sovereign*, of London, in November, 1871.

To Captain John T. Curtis, master of the *Cicerone*, of Dartmouth, a binocular glass for receiving on board his vessel the crew, &c. (9 in all) of the brigantine *Constance*, of Liverpool, on the 25th of January last, when their vessel was disabled, and landing them, free of any charges for subsistence, &c., on the 3rd February.

To Captain John Glover, master of the smack *Increase*, a telescope, from the German Government, for rescuing the crew of the German ship *Carl Agrell*, in December, 1869.

To Captain Thomas Braund, master of the ship *Isabella Margaret*, of Bideford, a first class gold medal and diploma from the French Government, for services to the crew of the French brig *L'Hélène*, of Marseilles, in March, 1867.

To Captain John Brown, master of the ship *Jinny Lind*, a first class silver medal and diploma, from the French Government, for services, in 1868, to the French galleot *L'Recompense*.

To Captain James Noble, master of the steamer *Marion*, of London, a first class silver medal and diploma, from the French Government, for saving the sole survivor of the crew of the French steamer *La Genevieve*, of Dieppe, in 1869.

To Captain John Keddie, master of the steamer *Dudley*, of Newcastle, a first class gold medal and diploma, from the French Government, for rescuing the crew of the French brig *Veritas*, of Nantes.

To Mr. Edward Clements, master of the boat *Release*, a first class silver medal and diploma, from the French Government, for services to the French ship *L'Amitie*, of Bordeaux, in 1870.

To Mr. Isaac Meak, second mate of the ship *Summa*, a second class gold medal and diploma, from the French Government, for having, at the risk of his own life, on the 1st January, 1869, saved the lives of some Indian emigrants in transit from Pondicherry to Guadeloupe.

To Captain Coudray (French), master of the steamer *Princess Royal*, of Glasgow, sailing under French colours, a binocular glass, for rescuing the crew of the schooner *Artizan* from their sinking vessel on 5th of January, 1872.

ANOTHER TRAINING SHIP FOR THE MERSEY.

WE are glad to find that Liverpool is still uneasy as regards boys for the merchant service. We trust that Liverpool will keep the lead in agitating for the training of British boys for the merchant service, and that other ports will follow. We, however, look forward to something better than the training of pauper boys, *en masse*, for British seamen. We do not know how often, and how long, we shall have to repeat that boys for the sea service ought to be picked strong healthy boys. It is well to clear our streets; it is well to provide for the unfortunate and

destitute, but why the unfortunate and destitute, often undersized and of low physique, should be deemed to be sufficient and proper to man our merchant ships, we cannot understand. No one desires to see proper boys, properly trained for the merchant service more than we do; we think if there is one point—one vital point—that successive administrations have failed to achieve, it is this proper training of suitable boys. Holding this view, and having great regard for the character of our Mercantile Marine, we look with anything but satisfaction on the operation of charitable institutions (otherwise essentially good in themselves), when they become the means of drafting large numbers of young and small children into merchant ships. The movement towards the establishment of training ships is a good movement, and calls for every encouragement, provided always that selected boys, and selected boys only, are sent on board, and provided that they are kept long enough to be of real use on board ship.

GENERAL.

SHIPBUILDING IN 1871.—A return has been presented to Parliament of the number and tonnage of vessels completed in 1871, and of those in course of construction at each port in the United Kingdom. From this return it appears that in England 418 sailing ships of 42,291 tons, and 369 steam ships of 210,634 tons were completed. In Scotland, 64 sailing ships of 17,878 tons, and 163 steam ships of 112,352 tons were completed in the year, and in Ireland 8 sailing ships of 91 tons, and 5 steam ships of 7,812 tons were completed in the year. The totals of these amount to 1,022 ships, steam and sailing, of 391,058 tons. Of these 510 were iron, 502 wood, and 10 composite. The iron ships averaged a tonnage of 690 tons each, and the wooden ships of 83 tons each. The vessels under construction in the year, and incomplete on the 31st December, 1871, were—in England, 220 sailing ships of 26,445 tons, and 237 steam ships 162,228 tons; in Scotland, 51 sailing ships of 19,117 tons, and 196 steam ships of 207,131 tons; and in Ireland, 1 sailing ship of 1,200 tons, and 5 steam ships of 11,537 tons. The total ships under construction on the 31st December last being 710 of 427,658 tons. The ports which figure chiefly in the list are—Glasgow, 82,000 tons built; Sunderland, 70,000; Newcastle, 44,000; Hull, 25,000; Liverpool, 24,000; Port Glasgow, 16,000; Greenock, 15,000; Stockton, 14,000; West Hartlepool, 11,000; London, 9,000; Shields and Belfast, each 7,000; Middlesbro', Aberdeen, and Dundee, each about 6,000; Hartlepool and South Shields, about 4,000.

THE
NAUTICAL MAGAZINE.

NEW SERIES.

MAY, 1872.

MERCANTILE MARINE LEGISLATION.

PERSONAL RESPONSIBILITY.

“VIGOUR IS CONTAGIOUS, AND WHATEVER MAKES US EITHER THINK OR FEEL STRONGLY, ADDS TO POWER AND ENLARGES OUR FIELD OF ACTION.”

DURING the last twenty-five years legislation has been busy, steadily removing fetters not only from communication and inter-communication, but also from the production and export of those innumerable substances, articles, and appliances, which are obtained by, or practically result from, the labour and energy of our people and the resources of our country; and the import of such raw materials and commodities as are required for consumption by the country at large, or for use in our factories, workshops, and homes, to employ our workmen. Throughout this legislation the grand principle has been acknowledged,—acknowledged, it may be, faintly at first, but at last avowed triumphantly,—that trade to be healthy must be unrestricted,—energy to be properly productive must be unfettered. Yet whilst this principle has been accepted, and has been acted on in legislation affecting commerce generally, there has been running through some of our Statutes a gradually widening under current which has its rise in opposite and therefore in erroneous bases. As regards commerce generally, our eyes have been opened, and we have been assiduously sweeping away protection even to the very rags, tatters, and dust; but, as evidence that no generation, like no one person, can be altogether wise, we have been clogging our Statute

Book with minute restrictions in another way. On the one hand we have proclaimed commercial freedom, and on the other hand we have been enforcing inspection and minute restrictions and interferences with the concerns of business. As regards our Mercantile Marine, the direction and pace in and with which we had been drifting on this under current of inspection and restriction (we can use no other word than "drifting") from 1844 to 1871, were pregnant with danger, and those who could comprehend this danger looked on with alarm, for they understood where we were likely to be stranded. The explosion of the *Cricket* had set free in this country a delusive stream of sensational legislation that had flowed on without check until Mr. Hicks' Committee of last year made their report, and Mr. Chichester Fortescue had the courage to bring in, and the determination to carry through, the Merchant Shipping Act of 1871. Those persons who talk of the Merchant Shipping Act of 1871 as "a sop," as "a mere redemption of a pledge," as a "body without a spirit," and those who fail to recognize the importance of the report of Mr. Hicks' Committee on Steam Boiler Explosions, are too short-sighted to appreciate the position from which we have just escaped, or to comprehend the change of principle now happily inaugurated.

The great fault of the legislation to which we have been objecting is that it tends not only to the requiring that certain things shall be done, but to dictating *how* they shall be done. There are many points in connexion with Mercantile Marine legislation that must be minute and must enter into detail. It is not to this that we object in the abstract, but what we do object to are details that require ships' boilers, engines, &c., to be constructed of certain specified materials, or in a certain manner, thereby taking away freedom of action from the owner and designer and preventing improvement. The Merchant Shipping Act of 1871 does go into detail when it requires a conspicuous scale of feet to be marked on the stem and stern of a ship in large characters, and when it requires the draft of water to be entered in the ship's log and noted by a public officer, and when it requires the ship's name to be painted on the bows. But these details in no way interfere with the seaworthiness or construction of the ship; in no way interfere with her employment, and in no way tend to lessen freedom of action or personal responsibility. If a statutory rule were to be made, preventing a ship from loading beyond a certain depth, such a rule would constitute an unwarrantable interference; but, to provide merely that she shall have a scale on her stem and stern so that her draft can be recorded, interferes improperly with no one. And, again, a provision that enables a proper Court to condemn a ship *known* to be unseaworthy is, in principle, very different

from a provision that would require every ship, seaworthy and unseaworthy alike, to be surveyed by a public officer. It is one thing to establish a system which shall punish offenders, and it is another and a different thing to establish a system whereby every man's ship is to be overhauled in order to discover whether he complies with the law.

In the minuteness with which our Statutes have dictated to the owners of ships, they have fallen short of the legislation of the protectionist United States of America; and we can best illustrate the dangers we have just narrowly escaped by adverting to the operation of the more perfect, complete, and logical Statutes of the United States, Statutes similar to our own in principle, but beyond ours in completeness. In the United States, beyond any country or state in the world, is there completeness and minuteness in Government interference and dictation as regards the business of the shipowner; for the build, equipment, and working of steam ships, and their machinery are regulated by Statute. It always happens (and these Statutes illustrate it) that in a pure democracy there is more interference with the liberty of the subject than under any other form of government. Our Legislature have been pretty exacting as regards the restrictions on, and inspection of, steam ships; and we, as a nation, hold a high position as regards the number of wrecks and casualties to our ships; the popular Legislature of the United States, on the other hand, have been able to carry through still more stringent rules, instructions, and restrictions; and their explosions consequently eclipse ours both in frequency and horror. The inspection there, is more thorough than here, and there the State has laid down minute rules for construction, and working, and loading of boilers, and for the testing and certifying of boiler plates. Boilers can there only be constructed of certified and stamped plates, riveted according to law, and can only be repaired where and how the inspector may direct. And there is a special penalty even for bad workmanship, a penalty of 1,000 dollars for "drifting a rivet hole to make it come fair." Looking to the perfection and completeness of the United States' system, people are, as they must inevitably be, sorely puzzled when an explosion happens there, and they ask in such a case, "if these explosions happen, with such a complete system of inspection, what would happen without it?" The conclusion arrived at is, that, if it were not for the system of inspection and certifying, explosions would even be more frequent than they are now. Our experience is directly the reverse of this deduction. We say that the explosions in United States ships are the result, and the direct result, of this minute system. If the survey of a vessel and her boilers ever had been, or ever could be, a guarantee that the ship would be afterwards carefully navigated, and would not be overloaded; that the boilers

would be properly worked, and that everything would afterwards be done honestly and well, and the machinery and all equipments, etc., kept in repair, and that it is never to the interest of an unscrupulous man to lose a ship, there would be much in a survey; but a survey and certificate guarantee, and can guarantee, nothing of the sort. The working of the ship has nothing to do with the certificate and her survey. Careless, incompetent, drunken, dishonest, or cheese-paring persons will bring a ship to grief, in spite of all surveys; and a certificate that serves to cover incompetency, or whitewash fraud, is not likely to conduce to the safety of a ship.

When an explosion happens in the United States, the owner has to prove, not that his ship was properly worked, manned, found, and navigated; not that her boilers were properly managed by competent persons; not that he took every means to ensure continued efficiency in all respects; not that the casualty arose from causes over which he and his servants could have had no control—he has to prove none of these things; but has to prove that his ship, etc., *had been surveyed*: and having proved this, he is held harmless of consequences. This being so, can any sane man doubt that we are right in saying that that system of State interference directly encourages, even if it does not cause, the very disasters it is meant to cure. The system is bad: but complete and logical. It is certainly logical that after the State has thoroughly interfered with, and dictated to, the owner, he should be held blameless in the end. It would never do to harrass him by interfering in his business, and then ignore the interference. One of two courses must be adopted, either dictate, and survey, and inspect, and watch, and spy, and then hold the owner harmless afterwards; or don't dictate, and don't inspect, and don't watch, and don't spy, but say honestly, "Owner, you are responsible." In the one case the energy of the owner may be directed towards the doing as little as is possible to get a certificate, and in hoodwinking the inspectors; and, in the other case, the energy of the owner will be directed towards the keeping of his ship efficient. What we have said over and over again, and what we must continue to say, is this: "Don't require a shipowner to prove that his ship has been surveyed, for that is easily done, and means nothing when it is done; but do require him to prove that he has taken all reasonable care in effecting and in maintaining her sufficiency and sea-worthiness. That requires care and intelligent supervision on his part, and the part of his servants." We are not amongst those who believe that irritating interference is the best way to provide for the safety of the public, or to encourage improvement; and we even go further, and say, that it is the direct way to ensure danger to the public, if and when it is carried out

logically, and is accompanied by indemnity to the owners, as is the case in the United States. Inspectors of passenger steamers in Great Britain have done their work honestly and well; and explosions here are not frequent, either on board certificated or uncertificated steamers. The reason is that whilst we have enforced by Statute certain minute details of construction and equipment, we have not yet drifted so far as the Americans have in dictating the *how* as well as the *what*: and, above all, because we have never, as they have, upset the common law liability, although we have been drifting steadily in that direction. There is no reason to suppose that inspectors in the United States are less honest than our own, or are less efficient; indeed, it would be gratuitous to assume that explosions there are the result of careless inspection. We believe the inspection to be more complete and more severe in the United States; and we think we hit on the cause of the frequency of explosions there, when we assert, as we do, confidently, that it is the absence of responsibility. We believe, purely and simply in personal responsibility, whether in State matters or in the commonest concerns of business and daily life; and we hold that the best way to ensure morality, intelligence, honesty, and efficiency, is to enforce personal responsibility as a first principle. This we are glad to be able to record has been the principle that guided the Royal Commission in their Report on the *Megara*, and the Court Martial, in their decision in the case of the *Agin-court*. Holding these views, we regard the Statute of 1871 as of more value than all the former Statutes relating to the efficiency of ships of the Mercantile Marine. A copy of the Statute we refer to is contained in our February number of the present year. The eleventh section of that Act makes it a misdemeanour for any person "having authority as owner, or otherwise," to send an unseaworthy ship to sea. Now that this personal responsibility has been clearly declared by Statute, many (it is, we fear, useless to hope that all) of the minute details that inaugurated the "Meddling and Muddling" school may soon disappear. The House of Commons clings to inspectors and interference; but that august assemblage, which has had the courage to throw over interference with commerce in all other ways, will, no doubt, in time, also deserve well of the country in this matter also. We regard the advent of the Statute of 1871 as an awakening, as it were, of intelligence on the part of the Legislature; a perception, though, perhaps, somewhat faint, of the great truth that the public is best served when efficiency and self-interest run hand in hand. There are, we are proud to say, few shipowners who would for a moment deny that they are morally bound to send their ships to sea in a seaworthy condition; but, whether they are morally bound to do so or

not, they are now, at any rate, legally bound. The honest owner hails this Statute with satisfaction; the disreputable owner sees in it a final blow to "floating coffins." The honest owner will no longer have to sail his sound and good ship in competition with a rotten one, sailing in his own trade.

Let those who uphold "paternal," or, more correctly speaking, "maternal," interference, on the part of the State in concerns of daily life, or in business transactions, reflect, that as it is with an individual, so it is with a whole people. Neither grown child, nor grown nation, can acquire force, or become self-reliant, manly, or true, so long as its mother, or its State nurse, keeps it in swaddling clothes and in baby jumpers, or perpetually provides it with a sucking bottle, or a prepared teat. Strong food, mentally and bodily; freedom of action; freedom of thought—all of which lead to a correct appreciation of personal responsibility—can alone make a man, or a nation, worthy of a place in the world.

THE BRITISH CONSTITUTION AND GOVERNMENT :

A DESCRIPTION OF THE WAY IN WHICH THE LAWS OF ENGLAND ARE MADE AND ADMINISTERED.

(Continued from our April Number.)

CHAPTER IV.—THE CABINET AND THE GOVERNMENT.

WHEN a man has more work than a single pair of hands can get through he employs some one to assist him, and the more his work increases the more persons he employs. In course of time, if he should continue to prosper, he ceases to work himself and directs those whom he employs; if his manufactory should still continue to increase in size he would in time appoint others to direct those who work for him, while he himself would take no part in the daily routine of his manufactory, and would merely be within call to give his advice and experience upon occasions of great importance. With the exception of one material point of difference, it is so with the Sovereign of the United Kingdom. In times, long since past, the King took an active part, not only in making the laws, but in administering them; in later times, however, the work of government so greatly increased as entirely to prevent the Sovereign from taking any part in the details of government, and now it would be thought unconstitutional for the Sovereign to do anything in the administration of the law except by the advice, and through the medium of his responsible advisers. Not only are judges and magistrates appointed to

judge and order the punishment of those convicted of breaking the law, but every department of the State is managed by a representative of the Sovereign, who is called a Minister of the Crown. These Ministers, as a body, form the Cabinet, and it is in accordance with their advice or counsel that the Sovereign acts. In their hands, indeed, is vested the whole of the Royal authority, and it is in this that the difference exists between the control exercised by a master over his foreman and workmen and by the King of England over his Ministers and subjects. The number of persons forming the Cabinet is not fixed, but it generally happens that about fourteen of the principal Ministers compose it. There is no rule requiring that the holder of any particular office should be a member of the Cabinet, or that a member of the Government should hold any office at all, but it has become the custom always to give a seat in the Cabinet to the holders of certain offices. There are several offices, the holders of which are sometimes members of the Cabinet and sometimes not; and in some cases eminent and aged statesmen have been appointed Cabinet Ministers without any special office, because of their great experience and ability. Nor is there any rule as to the relative number of peers and commoners who form the Cabinet, but usually the majority of those composing it are members of the Lower House of Parliament. The composition of the Cabinet is, in fact, regulated by no fixed rules. The necessities of the day, and the personal qualities of those who form the Government as a whole, alone guide the Prime Minister in choosing who shall and who shall not form the Cabinet.

The Cabinet, as we have already said, practically takes the place of, and performs the duties which were formerly discharged by the Privy Council; but although from long usage it has come to be considered as an essential part of the institutions of the country, yet its existence is not recognised by the law of the land. There is no official notification of those who compose it, nor is there any record of its meeting or of the business it transacts, and no mention will be found of it in any Act of Parliament. Its deliberations are always secret; and no one is allowed to enter the room where it is held during its deliberations. It is the duty of the Prime Minister, after each Cabinet, to inform the Sovereign what has passed, but none of those who compose it may, for any purpose, make public what has occurred in Cabinet without the express sanction of the Crown. Cabinets are usually held twice a week during the sitting of Parliament, and they are summoned by the Prime Minister in the following way:—"Sir,—You are requested to attend a meeting of Her Majesty's servants on ——day, at —— o'clock, at ——."

But, beside the members of the Cabinet, there are several others who form the Administration. If we count every member of the Government, we shall find they number more than forty; and the whole of these agree to act in concert, to remain in office as long as they can conscientiously approve the public acts of each other, and as long as the advice given by the chief members of the Administration to the Sovereign is approved by the country. Immediately their advice is disapproved by the country they all resign their offices, and others are appointed in their stead. How it is discovered that their advice is disapproved by the country we shall see presently, in the chapter dealing with the responsibility of Ministers.

The various officials forming the Government may be classified under three heads. First, in importance, are those who have seats in the Cabinet; next come those members of the Government who are not members of the Cabinet, but who are immediately associated with Cabinet Ministers in the administration of public affairs; and, thirdly, we have officials of the Royal Household.

The chief member of the Government is he upon whom the Sovereign calls to form an Administration or Government; and, although it has of late become the custom for him to appropriate to himself the office of First Lord of the Treasury, there is no fixed rule upon the subject, and he may assume whatever office he thinks best suited to his abilities, or most important for the time being. In 1788 Mr. Pitt, being called upon by his King to form an Administration, appropriated to himself the posts of First Lord of the Treasury and Chancellor of the Exchequer, and his example has been followed by others; but usually the Prime Minister takes the post of First Lord of the Treasury alone. As Prime Minister, his first duty is to gather around him the most able of his friends and supporters, and distribute among them the high offices of State according to their experience and ability. In doing this, care is taken to make such appointments as will be approved by the country. It sometimes happens that he is unable to secure the assistance of the most able statesmen of the day; perhaps they may differ from one another on important questions; or some other less weighty reason may exist to prevent them working amicably together. In such a case the difficulty of forming an Administration is greatly increased, and sometimes cannot be overcome. Whenever this is so the Prime Minister returns to his Sovereign, confesses his failure, and prays to be excused. Another is sent for, who will, perhaps, be successful. Having formed his Administration, the various departments of which will be described pre-

sently, the Prime Minister accepts the seals of his office from his Sovereign in person, and proceeds to the discharge of its duties. Being the principal adviser of the Sovereign, he has the power of appointing, not only all members of his own Government, but also all Archbishops and Bishops, and of nominating persons to fill all superior offices in the gift of the Crown as they become vacant. The Prime Minister also presides over the meetings of the Cabinet when Ministers consult in private as to what measures should be laid before Parliament for the better government of the country, and what advice should be given to the Sovereign as regards any important matters which may from time to time arise, whether it be in reference to a matter of dispute between this and another country, or a difficulty connected with our Colonies, or the people of the country generally. Thus it will be seen that the position of Prime Minister of England is one of the very first importance; it is second only to the position occupied by the Sovereign, yet it is a post which may be attained by any natural born British subject, no matter what his origin.

THE LORDS OF THE TREASURY.

We have said that the Prime Minister usually appropriates to himself the office of First Lord of the Treasury. The Treasury is the department which has to do with the receipt of all taxes and fines, and the payment of all monies. So far as the receipt and expenditure of money produced by taxation, generally known as the Consolidated Fund, is concerned, it controls every department of the State. Formerly the chief of the department was styled the Lord High Treasurer, but in 1612 it was thought advisable to place the office in Commission, that is, to distribute the duties and responsibilities of the office among several persons, who are styled Lords Commissioners of Her Majesty's Treasury. The Chancellor of the Exchequer stands next in importance to the First Lord as a Lord of the Treasury. It is he who actually superintends the control of the public moneys, and when we come to the chapters dealing with the House of Commons we shall see that he has a great deal to do with taxing the people. He has always a seat in the Cabinet, and is assisted by two or more Junior Lords of the Treasury, and two Secretaries, all of whom must have seats in one or other of the Houses of Parliament, and all of whom resign their posts whenever their chief goes out of office. Beside these, there are a number of officials at the Treasury, holding high positions, such as the Permanent Secretary, but as they do not go out of office with the Government, they form no part of this subject. They are members of

the civil service, who are appointed not on account of their political opinions, but because they are good men of business, who, it is believed, will do their work well, and they remain at their post as long as these expectations are fulfilled, no matter who is at the head of affairs. The salaries of the First Lord of the Treasury and of the Chancellor of the Exchequer are £5,000 a year each; the Junior Lords have £1,000 each, and the Secretaries £2,000. The whole cost of the department amounts to upwards of £55,000 per annum, but the sum varies from year to year, according to circumstances.

THE LORD CHANCELLOR.

The most important member of the Government, next to the Prime Minister, is the Lord Chancellor, or, to be more particular, the Lord High Chancellor of Great Britain. He is appointed, without writ or patent, by the delivery of the Great Seal into his custody. He is a Privy Councillor by virtue of his office, and usually a Cabinet Minister. He presides over the House of Lords, and is generally made a Peer of the Realm, but it is not absolutely necessary that he should be so. In former times it was not uncommon to appoint one not a Peer to the office of Lord Chancellor, but in that case, although he presided in the House of Lords he did not vote. He is the guardian of all infants, lunatics, and idiots; he is visitor in behalf of the Crown of all hospitals and colleges of Royal foundation; he appoints all the Justices of the Peace throughout the Kingdom, and joins with the Prime Minister in the appointment of all the Judges. He is said to be the keeper of the Sovereign's conscience, because in former times the office was commonly held by an ecclesiastic. Now, however, the dignity is invariably conferred upon a lawyer of distinction, because, in addition to his other duties, he has to preside over the Court of Chancery, and also over the House of Lords when sitting as a Court of Appeal. His salary as Lord Chancellor is £10,000 a year, and as speaker or president of the House of Lords, £4,000. Upon retiring from office, which he does with the Prime Minister, he receives a pension of £5,000 a year, provided there are less than four ex-Chancellors living; the rule being that not more than four ex-Chancellors can receive a pension at the same time. Socially, the Lord Chancellor holds a very high position. He takes precedence of all others except members of the Royal Family and the Archbishop of Canterbury.

The great dignity and emoluments of the office of Lord Chancellor would lead one to think that it is superior to that of Prime Minister.

Before the time of Queen Anne, when there was no Prime Minister as we now understand the term, the Lord Chancellor was the chief adviser of the Sovereign, and the great dignity and emoluments of the office in the present day are to be traced to this. It is necessary to go only a little further back, to the time of William III., to find that when he was offered the Throne of England what we now understand by the Cabinet had not then become a settled institution of the country. As, however, the nature of the Cabinet has become more defined, and the position of chief adviser of the Sovereign has become disconnected from the office of Lord Chancellor, the holder of that office has lost much of the power possessed by his predecessors, but has retained the social dignity of the position and its emoluments. It may occur to some that there is little reason for continuing to the office of Lord Chancellor so large a salary as £14,000 per annum, while the Minister, under whose advice he is appointed, receives only £5,000; but there is more reason for this than we may at first sight suppose. Those who attain to the high office of Lord Chancellor sometimes rise from positions of comparatively low degree by virtue of great natural ability, indomitable perseverance, and a life of hard work; and it is held that the dignity and emoluments of the office form a very fit reward for the efforts put forth to attain it; indeed the office has come to be regarded as a reward for distinguished legal attainments rather than as a remuneration for political services. Besides, lawyers of eminence would not accept the office unless the salary were sufficient to induce them to relinquish their practice. The pension, too, is awarded partly as a reward for distinguished services in the past, and partly as payment for services given by ex-Lord Chancellors, or Law Lords, as they are called; for, as we shall presently see, those Privy Councillors who are lawyers sit as a Committee of Appeal upon ecclesiastical cases and appeals from India and the Colonies, and ex-Lord Chancellors, being Peers, sit in the House of Lords to hear and decide upon such cases as come before the House of Lords as the Supreme Court of Judicature in the Kingdom. Besides, it is a position which any man who chooses the law for a profession may attain to, provided he has the ability to do so, and it is a very great advantage to the country that so rich a prize should be held up for competition.

THE LORD PRESIDENT.

The office of Lord President of the Council is always held by a Peer, and the holder of the office is always in the Cabinet. He is head of the Privy Council Office, and in the Privy Council Office are sub-depart-

ments, which carry into effect the laws relating to Quarantine, Cattle Disease, Education, and other matters for the control of which there is no special department of State.

THE VICE-PRESIDENT OF THE COMMITTEE OF COUNCIL ON EDUCATION.

The Vice-President of the Committee of Council on Education is invariably a member of the House of Commons, but whether he is a Cabinet Minister or not depends upon the importance of the office for the time being, and the ability of the person holding it. Being head of the Educational Department, the office of Vice-President was very much increased in importance by the passing of the Elementary Education Act in 1870, and it was thought necessary in the following year that the holder of the office should be a member of the Cabinet, but it did not follow from this that any future holder of the office would be so distinguished. In this capacity he has the control of our system of national education. The Committee over which he preside controls the action of all School Boards, review the decisions come to by those Boards in many cases, and in some has the power of preventing those decisions from being acted on. His assistants examine the scholars in all the schools receiving grants from Government, and estimate the amount each should receive. But, whatever is done by the department over which he presides, is done in accordance with powers vested in it by an Act of Parliament, and any future Act of Parliament may enlarge or restrict those powers in any way the Legislature may think fit. One of the most important of the duties of the Vice-President is to lay before the House of Commons a statement of the amount of money required by the department for the education of the people, and to obtain the sanction of the House for its expenditure. The salary of the President and Vice-President is £2,000 a year each, and the cost of the inspection of schools amounts to nearly £66,000 a year.

THE LORD PRIVY SEAL.

The Lord Privy Seal is an official whose duties are for the most part formal in character and not very onerous. He gives authority to the Lord Chancellor to use the Great Seal when occasion requires it. The holder of the office receives £2,000 per annum, and attempts have been made to abolish the office on the ground of economy; but it is contended that offices of this character should be continued, and given to men of experience, whom it is desirable to have in the Cabinet. It is said, also, that such men are needed to undertake special work connected with no

department in particular, or who can be called on to assist any other member of the Government, if required. Indeed, many cases occur in which the head of an overworked department needs the assistance of a competent person to conduct an enquiry of great importance, upon which legislation may follow.

THE PRINCIPAL SECRETARIES OF STATE.

There are five principal Secretaries of State, each of whom has a seat in the Cabinet, and amongst whom are distributed the management of affairs at home, our relations with foreign Powers, our business with our Colonies, the care of our army, and the government of India. The nature of their appointments does not confine either of them to the discharge of the duties of the particular office he undertakes; they have each full powers to discharge the duties of the others without any fresh commission from the Crown, and convenience only dictates what department of the State they shall each have charge of. Each of these Chief Secretaries is assisted by an Under Secretary, having a seat in Parliament, and the appointments are generally distributed in such a way that each department has a representative in both Houses of Parliament. If, for instance, the Home Secretary be a Peer, the Under Secretary for the Home Department will be nominated from among members of the Lower House, or the reverse. The salaries of the five principal Secretaries of State are £5,000 per annum each, and of the Under Secretaries £1,500, except the Under Secretary for India, who draws only £1,200. These Under Secretaries are called Parliamentary Under Secretaries, to distinguish them from the permanent Secretaries of each department, who remain at their posts, no matter what Government is in office. The Under Secretaries never have a seat in the Cabinet.

THE HOME SECRETARY.

The Secretary of State for the Home Department occupies a very important position in the Government. He controls the inspection of factories, mines, salmon fisheries, reformatories, and industrial schools. He has the control of all prisons; he keeps a strict account of all crimes committed throughout the country, and, by periodical inspection, endeavours to secure an efficient body of police in every part of the Kingdom. The police are under the immediate control of the various Town Councils and Boards having authority over the districts wherein they serve, but the Imperial Government makes a grant of money to each of these authorities, in part payment of the cost of their police, provided they are efficient; and

by this payment purchases the right to inspect. Upon the Home Secretary also devolves the duty of considering and advising the Crown with reference to applications for pardon or commutation of sentence in the case of convicted criminals; and he has the power of reviewing decisions by magistrates and even remitting penalties. The power of dismissing magistrates rests with the Lord Chancellor, but dismissal is often preceded by, and is a consequence of, a representation from the Home Secretary. The Home Department costs the country over £87,000 a year.

THE FOREIGN SECRETARY.

The Secretary of State for Foreign Affairs conducts our diplomatic intercourse with foreign Powers. He instructs our Ambassadors and our Consuls at foreign ports in this respect. He receives the Ambassadors from foreign Courts, and transacts all the business of the State with them. He negotiates all treaties with foreign Powers, whether they relate to commerce or the settlement of international disputes. It is an office of great trust and responsibility, as upon the good management of the Secretary of State for the Foreign Department often depends the question of peace or war. The Minister selected for the office is, as a rule distinguished for his soundness of judgment and his extended knowledge of politics and diplomacy. He controls the expenditure of £65,000 a year.

THE COLONIAL SECRETARY.

The Secretary of State for the Colonies, as the name of his office implies, superintends the action of this country with regard to our Colonies. He appoints all Colonial Governors and controls the Government of each Colony according to the powers conferred upon him in each case—that is to say, he has certain general powers of control over the Governments of all Colonies, but, in several cases, special Acts have been passed by Parliament, restricting his powers, or conferring upon him special powers. Whenever any Colony requires the assistance of the mother country in money matters, it is through the Colonial Secretary that the application comes before Parliament. This assistance is usually granted in the shape of loans, or rather guarantees, upon the part of this country, to pay back any loan a colony may raise if the colony should not be able to do so. Unless the Acts of Colonial Parliaments and Legislatures are approved by the Colonial Secretary they cannot remain in operation. The Colonial Department costs the country nearly £35,000 per annum.

THE SECRETARY FOR WAR.

The Secretary of State for War has control of the army at home and abroad, and is superior even to the officer Commanding-in-Chief, because

he represents the Sovereign who is theoretically the Commander-in-Chief though not actually commanding. All movements of troops are made by his direction; all appointments and promotions by the officer Commanding-in-Chief are made subject to his approval. He is responsible for the efficiency of the army to the Crown and to Parliament, by whom he is required each year to justify the cost to which he puts the country on that account. He is assisted by a Surveyor-General of the Ordnance, who, as well as his Parliamentary Under Secretary, have a seat in one or other branch of the Legislature. Including the pay of the soldiers, the War Department spends as much as £14,000,000 per annum, even in times of peace.

THE SECRETARY FOR INDIA.

The Secretary of State for India may be said to be the ruler of our Indian Empire during his term of office. He represents the Crown in all our dealings with India, and, though he consults, from time to time, with a council formed by men whose great experience in Indian affairs qualifies them for the office, the responsibility of all decisions come to rest upon him. In order clearly to understand the position of the Secretary of State for India and his Council, we must go back to the time when India was colonised by a body of British merchants, known as the East India Company. The East India Company was founded upon the last day of the year 1600, by Queen Elizabeth granting a charter to the Earl of Cumberland and 215 Knights, Aldermen, and merchants for the exclusive right of trading in India for fifteen years. This was 100 years after the Portugese had found their way to the shores of India by sea; but the Company succeeded in establishing factories on the coast, and, in course of time, by dint of superior energy, became the chief European traders with India. As they progressed, fresh charters were granted to them by the Crown, and, as their Possessions increased it became necessary to establish an armed force to protect their factories and warehouses. This force, in course of time, developed into an army, by means of which the Company was able to extend its operations far inland, until they became, under the Sovereigns of England, rulers of the Indian Empire. The Government of India was carried on by the East India Company as late as 1784, but in that year a department of State was formed by an Act of Parliament called the Board of Control, consisting of six Privy Councillors, who were to control the Company in the administration of affairs in India; but in 1858 both the Company and the Board of Control were superseded by

an Act of Parliament, conferring upon the Secretary of State and the Council of India all the powers jointly possessed by the Board of Control and the Company. The Council of India, as constituted by the Act, consists of fifteen members, eight of whom are appointed by the Sovereign and seven by the Directors of the East India Company. They are not permitted to sit in Parliament, and they retain their office during good behaviour, at a salary of £1,200 per annum.

But the Secretary of State, assisted by this Council and his Secretaries, decides only what shall be the general policy of the Government of India; the actual administration of the affairs of India in detail devolves upon a subordinate department in India itself, headed by the Governor-General, or Viceroy, of India, and styled the Government of India. The Commander-in-Chief of the army in India is the principal member of the Government; and, besides four other Members, who are styled Ordinary Members, the Governors of each of the Presidencies of Bengal, Madras, and Bombay, sit as Extraordinary Members of the Government whenever the Governor-General assembles his Councillors together within his territory. Besides these, there are Additional Members for making laws and regulations, and five Secretaries to the Government—one for Home Affairs, who controls the administration of the law in the same way as our Home Secretary does in England; another for Finance, who manages taxes and the expenditure of public money; a third for Foreign Affairs, who transacts all business which may arise between the Indian Government and the Governments of surrounding countries; and the fifth for Public Works, such as the making of roads, railways, docks, and carrying out irrigation schemes, of which there is great need in India, owing to the heat of the climate and the recurrence of seasons of drought.

The local affairs of the three Presidencies are regulated by their three Governors, each of whom is assisted by a small Council, his private advisers, and some Additional Members for making laws and regulations, besides an establishment of Secretaries, Revenue Collectors, Judges, and Magistrates. These officials are responsible to the Governor of their Presidency; the Governors of the Presidencies are responsible to the Governor-General, or Viceroy, who is responsible to the Secretary of State, who, in his turn, is responsible to the Crown and to Parliament.

This elaborate machinery for the government of India is necessary on account of its great size. The Presidency of Bengal alone is six times as large as Great Britain, and the population under British rule in India numbers 180,000,000. There is no Parliament in India as there is in most of our Colonies. Laws are made there by the Council just referred

to, and the only protection the people of India have from oppression is the watchfulness of the English Parliament over their liberties. Recently, however, natives who have distinguished themselves have been advanced to positions of trust in the Government; there are three natives in the Council of the Governor-General, and it is hoped that, in time, as the native population becomes educated, the people will appreciate good Government and be anxious to take a part in it. The Government of India costs the natives between £40,000,000 and £50,000,000 a year.

THE FIRST LORD OF THE ADMIRALTY.

The First Lord of the Admiralty is the Cabinet Minister, who undertakes the management of the British navy. Formerly the head of the navy was styled the Lord High Admiral of England, whose position as regards the navy corresponded with that of the Lord High Treasurer as regards the nation's receipts and expenditure. But the office of Lord High Admiral also, like the office of Lord High Treasurer, was in 1688 put into commission, that is to say, the duties of the office were distributed among several persons, who are called Lords Commissioners of the Admiralty. They are five in number, including the First Lord. They are also called the Board of Admiralty, because the original intention was that the Lords Commissioners of the Admiralty, with the Chief Secretary, should consult together upon matters connected with the navy. This was thought necessary, because it generally happened that the office of First Lord of the Admiralty was given to a statesman who was chosen on account of his high standing as an administrator rather than because of his knowledge of ships of war; indeed, cases have been known of the office of First Lord of the Admiralty being held by statesmen who had never been on board a ship of war in their lives. This may appear very strange, but a little consideration will show that it is not by any means a bad feature in the administration of naval affairs. Let us consider the matter. The First Lord is appointed, we will say, because he has shown himself to be a man of sound judgment in every department of the State which he has occupied. Two of the Lords Commissioners, we will suppose, are appointed because they can boast of long experience in naval affairs, having served in the Navy from their youth and occupied every position in the Service from midshipman to admiral. The Fourth Lord owes his appointment, let us say, to his experience in shipbuilding or dockyard management. The Fifth Lord may be a rising statesman, having no connection with the navy; and

the case of the Secretary, we will suppose, is the same. The First Lord would be the only Cabinet Minister among them, and he would be a member either of the House of Lords or the House of Commons; the others would be described as Sea Lords, or Civil Lords, or Junior Lords, as the case might be; and the Secretary would be, in all probability, a member of the House of Commons. Now, it is easy to understand that a man who has spent all his life in a profession might become prejudiced in favour of its old customs and impatient of any change. This, it is supposed, would be the case with men who had served in the navy all their lives, and, consequently, it has been held to be impolitic to place at the head of the navy a naval officer, however distinguished, altogether uncontrolled. At the same time, no one would be more competent to give an opinion upon any question connected with the navy than an admiral. Accordingly it has been thought best to associate together several competent men, each of them experienced in one department or another, and place at their head a distinguished statesman, who would, in all matters of moment, consult with them and form an opinion upon the basis of their experience. In this way, it is believed, a thoroughly sound and unprejudiced conclusion is arrived at.

The First Lord of the Admiralty, advised in this manner, has supreme control under the Crown, of everything connected with our Navy; it is under his direction that ships are built and manned, and that officers are appointed to command them. No ship of war sets sail without orders from the Admiralty, and all commanders are responsible to the Board for misconduct. The First Lord of the Admiralty has to provide vessels, or transports, for the conveyance of troops when required by the Secretary of State for War; and the Coastguard Service, and the Royal Naval Reserve, which form our reserves of seamen, are under his control. The men of the Coastguard are posted round the entire coast, not only to prevent smugglers landing goods upon which customs' duty should be paid, but it is part of their duty to report to the Admiralty if a foreign man-of-war is seen by them, no matter how peaceful her appearance and intentions. They are also charged with the saving of life from shipwreck by means of the rocket and life-boat apparatus, the protection of wrecked property, and the instruction of the naval reserve of merchant seamen. The Royal Naval Reserve are merchant seamen who undergo twenty-eight days drill in each year, who receive an annual retaining fee paid through the Board of Trade, and who undertake to serve in the navy upon any sudden emergency. The expenditure upon the navy, including the pay of the men, the cost

of the ships and fortifications and the salaries of officials, sometimes reaches, and even exceeds, £10,000,000 a year.

THE PRESIDENT OF THE BOARD OF TRADE.

The President of the Board of Trade, who is invariably a Cabinet Minister, occupies a very important position in the Government. England is essentially a commercial country, and the Minister at the head of the department which has the control of her commerce must necessarily be an important personage. England is at once great as a mine, a manufactory, a depôt, and an entrepôt. Being rich in coal, in iron, and in people, we of necessity produce more than we can consume, and our merchants send, and our railways and ships carry, the surplus where it can be disposed of, or across the seas to countries whose people are in want of our productions. And besides this, we are continually receiving in our ports and harbours goods and merchandise from abroad far in excess of our own wants, and these goods and merchandise here find ships by which they can be conveyed to countries where the people are anxious to receive them. It would be of little use for our miners to bring up more coal and iron than is sufficient for our consumption, if we had no railways to carry the surplus to the coast, and no ships to carry it from the coast to foreign countries. It is these carriers, and all connected with them, whom the Board of Trade chiefly controls. But so great are the ramifications of trade, and so extensive is the office known as the Board of Trade, that we find that office dealing with, and having superintendence over the opening and proper conduct of Railways and Tramways, the Publication and Revision of the Standard of Weights and Measures and Tariffs, the Registration of Designs and Copyright, the control of Art Unions and of Industrial Exhibitions, the supply of Water and Gas, the granting of Charters of Incorporation, and the conduct of Insurance and all other Joint Stock Companies. It is chief in the administration of all matters connected with the Sea, Lighthouses, Harbours, Piers, and Foreshores, and the Oyster and Mussel Fisheries are under its control; it has to do with the Registration and Measurement of Ships, the Testing of Chain Cables, and the Survey of Passenger Ships, the Examination of Masters and Mates of Ships, the Health and Discipline of Seamen, the Rule of the Road at Sea, the whole System of Pilotage, and Signals at Sea, the Use of Rockets, Lifeboats and all Means of Saving Life at Sea, and the Care of Distressed Seamen Abroad. It also enquires into the Causes of Wrecks and Explosions at Sea. In no department of the State is there so great a necessity that the Chief should be possessed not only of power to comprehend the laws and requirements of com-

merce, but also a capacity for administrative details. At one moment his advice may be required on a delicate point in connection with some treaty, or on a grave question arising out of some international case such as the Alabama claims, and the next moment he may be laying down a minute rule for the survey of the boilers of a passenger steamer or a ship's fore-castle, or the condemnation of cast-iron in boilers, or the regulation of an oyster bed, or the firing of a rocket, or the erection of a lighthouse, or the opening of a railway, or the bringing ashore of a crew from a wrecked ship. At one moment he is engaged upon the most grave questions of principle, and at another with the most vexatious and minute details. The Board is theoretically composed of members of the Privy Council, who are known as the Right Honourable the Lords of the Committee of her Majesty's Privy Council, appointed for the consideration of all matters relating to Trade and Foreign Plantations. The matters connected with "Foreign Plantations," which is only the original description of what we now understand by our Colonies have been taken away from the Lords of Trade, and now form the duties of the Colonial Office. But although the Board is theoretically composed of a Committee of the Privy Council the President and the Parliamentary Secretary are responsible to Parliament and the country for the policy pursued by the Board. The President indeed is absolute master of the place, and is responsible for everything and everybody. The business of the department is managed by a Permanent Secretary, and three Assistant Secretaries, who, under his superintendence, carry into effect the provisions of Acts of Parliament relating to harbours, railways, the Mercantile Marine, and other matters. In all matters connected with commerce, so far as carrying into effect the intentions of the Legislature is concerned, the Board of Trade is supreme, and its uniform object is to see that the public is well served, and that life and property is not unnecessarily exposed to danger. For instance, no railway or tramway can be opened until it has been inspected by an officer of the Board of Trade; this is supposed to prevent companies opening imperfect and dangerous lines; and in the same way no steam vessel is permitted to carry passengers unless the regulations of the Board are complied with; and it is the Board of Trade who advises Her Majesty in Council what orders should be made as regards lights to be shown by vessels at sea. The Board of Trade also collects statistics; it furnishes periodical returns of our imports and exports, and ascertains as accurately as possible the amount of corn grown in the country. The Board of Trade, as the department having control over the Mercantile Marine of this country, also undertakes the duty of

keeping the members of the Royal Naval Reserve together, and of paying their annual retaining fees.

The salary of the President of the Board of Trade is £2,000 per annum, of the two Secretaries £1,500 each, and the three Assistant Secretaries, £1,200 each. The total cost of the Department is £98,285.

THE PRESIDENT OF THE LOCAL GOVERNMENT BOARD.

The President of the Local Government Board is an official who was formerly known as the President of the Poor Law Board; he is not always in the Cabinet, but his office is rising in importance every year. He controls all matters relating to public health as far as it is influenced by local administration. He is, to a great extent, the controller of all local boards, elected by the ratepayers of the various towns and counties throughout the country for the purpose of administering relief to the poor, and for carrying out such local public works as do not come within the province of the Home Secretary. The department is represented by several inspectors, one of whom upon the occasion of any complaint as to the conduct of relieving officers, masters of workhouses, or Boards of Guardians, proceeds to the spot, and conducts an enquiry into the matter complained of.

THE FIRST COMMISSIONER OF WORKS AND PUBLIC BUILDINGS.

The First Commissioner of Works and Public Buildings is seldom a member of the Cabinet, and is an official of minor importance. He is at the head of the department which controls all expenditure connected with the repair of royal palaces and public buildings, and the maintenance of royal parks. He has also to control the expenditure on account of furniture for the public offices, and if any new offices are required, his is the department to which plans are submitted, and which superintends the works when actually in progress. He is assisted by several secretaries, surveyors and accountants, but he is himself the only representative of the department having a seat in Parliament. His salary is £2,000 a year.

THE POSTMASTER-GENERAL.

The duties of the Postmaster-General are more easily described than those of any other member of the Government. He is at the head of the Post Office, which includes the control of the telegraph system throughout the country. Whether the holder of the office is a member of the Cabinet or not, entirely depends upon personal considerations, because no questions of State policy are likely to arise out of the management of a department which is nothing more than a great carrying concern. The business of transmitting letters might be carried

on by a company in the same way as the railways are managed by private persons: in the same way, in fact, as the telegraph was formerly managed, but it is thought best that so large an undertaking as the Post Office should not be in the hands of any private person, for fear one section of the community should be favoured at the expense of another. Besides this, it is expedient that the country should have a cheap and rapid means of intercommunication; the cheaper and more rapid the means of intercommunication the greater the amount of business transacted by the country, and, consequently, the greater its prosperity. Now it is clear that if the letter-carrying were in the hands of private persons, their chief object would be profit for themselves; but the head of a public department seeks in the first place the convenience of the public, and it is a rule with the Postmaster-General to make as little profit as prudence will permit. The salary of the Postmaster-General is £2,500 a year; the total expenditure of the department is about £9,600,000, and the receipts from the public £4,600,000, showing a profit of £1,000,000. The profit of course varies from year to year because the postage of letters is reviewed from time to time, and reduced as circumstances will allow.

The Post Office is, probably, the nucleus of our future Government service. There is no doubt that everything is tending towards a reduction of the number of separate offices and boards. The system towards which everything is finally pointing is one which will require all the subordinate State officials in a town or city, whether they are Postmen, Telegraph-boys, Tax Collectors, or Customs Officers to be placed under one responsible head and under one roof.

THE CHANCELLOR OF THE DUCHY OF LANCASTER.

The Chancellor of the Duchy of Lancaster is the head of the department which manages the property attached to the Dukedom of Lancaster, which formerly belonged to the Sovereigns of England, but is now held by the Crown as the property of the State. The duties of the office are not very onerous, and are for the most part discharged by the Chancellor's subordinates, the chief of whom holds a position somewhat analogous to that of steward to a nobleman possessing large estates, but of course the position is one of far greater distinction. It sometimes happens that the office of Chancellor of the Duchy of Lancaster is held by a statesman whose services are needed in the Cabinet, but whose age prevents him from undertaking the control of a department requiring much attention.

THE LORD LIEUTENANT OF IRELAND.

The Lord Lieutenant of Ireland, who is always a Peer, lives in Ireland and controls the administration of the law throughout that country in the

same way as the Home Secretary does in this. But he is something more than a Home Secretary; the judges and other officials are appointed upon his recommendation, and he lives at Dublin Castle in a style equal to that of some foreign princes. His salary is no less than £20,000 a year, but being generally a nobleman of great wealth he usually spends thrice that sum while in office. The lord lieutenants of counties, the sheriffs, and the magistrates are all appointed by him as representing the Crown; all applications for reprieve of convicted criminals are made to him, and he is in all respects King of Ireland, subject only to the Cabinet, or, in theory, to the Sovereign of the United Kingdom. But in all his proceedings he acts in concert with the members of the Cabinet in London, of whom his Chief Secretary is generally one.

THE CHIEF SECRETARY FOR IRELAND.

The Chief Secretary of the Lord Lieutenant of Ireland has an office in London as well as in Dublin, and during the sitting of Parliament he usually remains in England. While the Lord Lieutenant represents the Government in Ireland, his Chief Secretary represents the Irish Government in Parliament. Upon occasions when matters of great moment to Ireland are under discussion in the legislature, it is usual for both the Lord Lieutenant and the Chief Secretary to be in London, the one to represent the department in the House of Lords, the other in the House of Commons. Upon such occasions the office of Lord Lieutenant is put in commission, and his seals of office are left in the care of two or three of the most distinguished members of the Irish administration, probably the Lord Chancellor, the Lord Chief Justice, and the Commander-in-Chief. The Chief Secretary of the Lord Lieutenant has a salary of £4,425 per annum, and the whole cost of his department in London amounts to between £16,000 and £17,000 a year.

THE ATTORNEY-GENERAL.

The Attorney-General is the officer who represents the Crown in courts of law in all cases where the rights of the State have to be defended; he is knighted upon being appointed, but is not made a Privy Councillor. He examines petitions for patents, gives opinions upon points of law which arise in connexion with the Government, and defends the policy of the Government in the House of Commons when legal questions are at issue. He quits office with the Prime Minister who appoints him. The office of Attorney-General, though of great dignity and importance of itself, is of still greater importance when regarded as a stepping-stone to higher office. Whenever the Lord Chancellorship becomes vacant by any occurrence other than a change of Government,

the appointment is usually offered to the Attorney-General, who, by custom, also expects the first offer of any position among the judges that may become vacant during his term of office.

THE SOLICITOR-GENERAL.

The Solicitor-General holds a position with regard to the Attorney-General somewhat similar to that an Under Secretary of State holds to the Chief Secretary of his department, except that he is not appointed by the Attorney-General but by the Prime Minister himself. He is appointed from among the Queen's Counsel, must by custom be a member of the House of Commons, is knighted upon being appointed, and quits office with the Minister who appoints him. He usually succeeds to the office of Attorney-General, if it should become vacant by death or preferment, or in any way other than that of a change of administration.

THE ATTORNEY-GENERAL AND SOLICITOR-GENERAL FOR IRELAND.

There is also an Attorney-General and a Solicitor-General for Ireland, who represent the Crown in the Irish Courts, and sometimes they secure seats in the House of Commons, where they actively support the Government in respect of all measures affecting Ireland.

THE LORD ADVOCATE AND SOLICITOR-GENERAL FOR SCOTLAND.

The representatives of Scotland in the Government are the Lord Advocate, who occupies a position somewhat similar to that of the Attorney-General, and the Solicitor-General for Scotland. If these officers happen to secure seats in the House of Commons they represent the Government upon domestic as well as legal matters affecting Scotland; for, strange as it may seem, the laws of England are not in all cases the laws of Scotland, and new laws are passed every year continuing this difference. The Lord Advocate has an office in London, and the department over which he presides costs the country upwards of £72,000, his own salary being £2,387. The Attorney-General and Solicitor-General for Ireland, the Lord Advocate and Solicitor-General for Scotland, all retire from office with the Prime Minister who appoints them.

THE OFFICERS OF THE KING'S HOUSEHOLD.

The officers of the King's household, who are appointed by the Prime Minister, and remain in office only as long as he, are the Lord Steward, who presides over the Board of Green Cloth, which manages the palaces set apart as residences for the Sovereign; the Comptroller of the Household, who is also a member of the Board of Green Cloth; the Lord

Chamberlain of the Household, who controls all persons employed in the chambers of the Sovereign, and his deputy, the Vice Chamberlain; the Master of the Horse, who has control over the equerries, grooms, and all others concerned in the management of the Sovereign's horses; the Master of the Buckhounds, who occupies a like position with regard to the kennels of the Sovereign; the Master of the Robes, and the Mistress of the Robes, whose titles describe the duties of their office.

Some think it very singular that such officials as these,—the Master of the Horse, and the Mistress of the Robes, for instance,—should go out of office with the Prime Minister; but it is held by very high authorities that these officers, who hold in some cases almost daily intercourse with the Sovereign, might exercise such influence over the King or Queen, or both, as materially to interfere with the advice given by the more responsible minister, and thus prevent good government. The Duke of Wellington felt this so strongly that when, in 1828, he was required by the King to form an administration, he declined the responsibility, unless he was allowed to appoint the Mistress of the Robes to the Queen. The point was conceded, but as the Duke had no objection to the lady who formerly held the office returning to it, he advised his Majesty to re-appoint her. The Duke of Wellington foresaw that, although there was little probability of the lady who then held the office of Mistress of the Robes, interfering with the counsels of the King, it might not be so at some time in the future, when it would perhaps be more difficult to correct the evil.

Having now described the whole of the officers of the State who act under the Prime Minister, let us run over the list, taking them in the order of their importance. The following are invariably Privy Counsellors and members of the Cabinet of the Sovereign:

The First Lord of the Treasury, the Lord Chancellor, the Lord President of the Council, the Lord Privy Seal, the Chancellor of the Exchequer, the five principal Secretaries of State, for the Home, the Foreign, the Colonial, the War, and the Indian department, the First Lord of the Admiralty, and the President of the Board of Trade.

The following are sometimes in the Cabinet, and sometimes not:

The Chief Secretary for Ireland, the First Commissioner of Works, the Postmaster-General, the President of the Local Government Board, the Vice-President of the Committee of Council on Education, and the Chancellor of the Duchy of Lancaster.

The following never have seats in the Cabinet:

The Lord Lieutenant of Ireland, the three Junior Lords of the Treasury, and the two Secretaries to the Treasury; the Junior Lords of the

Admiralty and the Secretary to the Admiralty; the Attorney-General and the Solicitor-General; the Attorney-General and Solicitor-General for Ireland; the Lord Advocate and the Solicitor-General for Scotland; the five Under Secretaries to the five principal Secretaries of State; the Parliamentary Secretary of the Board of Trade, the Secretary to the Local Government Board, and the officials of the Royal Household.

(To be continued.)

SMALL BLACK VIBRIOS.

This information is collected from a Paper "ON PROTOPLASMIC LIFE,"
by F. CRACE CALVERT, F.R.S., Manchester.

THOSE of our readers who are fond of pets should at once turn their attention to small black vibrios. Dogs are troublesome, and are subject to taxation. Cats are a nuisance to neighbours, and are given to thieving. Birds are liable to divers complaints, and require a deal of attention. Horses are expensive. Monkeys at the very best are not clean in a house. Children require correction and training; but small black vibrios are free from all such drawbacks. Therefore we repeat, give attention to small black vibrios. There are several sorts of vibrios. Amongst them we may specially name the ordinary swimming vibrio, the long vibrio, the very long vibrio, and the small black vibrio. The first point is, of course, to catch your vibrios. For, like "facetious Mrs. Glasse," who doth advise "that you should catch your hare ere you do cook it," we must also advise that you catch your vibrios ere you do cook them. Fortunately, the capture is more easy in the case of Vibrios than the cooking. Vibrios do not require fishing for with a hook and line, or chasing with hounds and horses, or shooting with double-barrel breach-loaders and swan shot. In fact they only require collecting. Not that vibrios are the result of spontaneous generation. Oh, dear no! we do not believe in spontaneous generation in the case of vibrios, any more than in anything else. We do not believe that bullocks or seamen are spontaneously generated, and why should we believe that small black vibrios are? We know that learned men differ on the point. Some think that our pets come of themselves—grow out of nothing, like Topsey. Well, they may think so, so long as they don't wish us to believe it too. We believe that the germs of our small friends float in the air, and that without the germs we should get no young vibrios, any more than chickens can be got in the absence of the process of laying and hatching eggs. In short, to

use a very simple expression in treating so learned a subject, we go in for "germ life," as against "spontaneous generation." The "germs" are ever present in the atmosphere,* and we may remark, as a general proposition, that these germs are present in everything with which the atmosphere comes in contact. To hatch the germs, and to collect and nourish the brood, the best way is to take some of the white of an egg and mix it with water—distilled water will do, but, if we are in a hurry, there is nothing like the ordinary pea-soupy London water. Distilled water may take some little time, but with ordinary London water and a new-laid egg we can produce vibrios in fifteen minutes. The reason of this is, of course, that the germs are in abundance in the water; or, in other and much finer words, the water is "polluted by impregnation by the protoplasmic life existing in the atmosphere." It is easy to get water which contains these germs, but it is difficult to get water which does not contain them. There can be but little doubt that those learned gentlemen who believe in "spontaneous generation" have, in the experiments they have made, failed to exclude germs. In order to get water without the germs, a complicated apparatus has to be contrived, and pure hydrogen gas has to be blown through it, and the water has to be distilled four or five times, and without contact with the atmosphere, and the parts of the apparatus have to be boiled, and potash and permanganate of potash have to be mixed with the water about to be distilled.

The first curious experiment which a fancier of vibrios will make will, no doubt, be to prove that they don't come of themselves, but from germs. To do this, some of the distilled water, *free from life*, should be put into tubes, and left exposed to the atmosphere for several hours, the tubes should then be *hermetically sealed with a blowpipe*. In such a case it has been found, as the tubes were opened from time to time, that in such of them as had before being sealed been placed near putrid meat, vibrios were developed in six days, whereas, if the tubes before being sealed had not been placed where there was plenty of protoplasmic life in the atmosphere, those opened on the 24th day from sealing were the first to show life. This was in the month of January. The distilled water kept in the flask in which it was distilled, showed no life, when opened at the end of sixteen weeks. When white of egg was added to the distilled water, and put into tubes exposed to the atmosphere for some hours, and then hermetically sealed, it took five days only to produce the vibrios. Albumen assists the water to go bad, that is to say, it facilitates the development of protoplasmic life in water, that is why we recommend fanciers to use it.

* More numerous in summer than in winter, and more numerous near decaying matter than anywhere else.

Having got our vibrios, we must now proceed, as we do with all our pets, to torture them. The most satisfactory way to do this, is to "subject them to the action of heat," or, in plain words, to boil them. This experiment is interesting, as it will show that we are right in recommending the small black. We can boil them to various temperatures, and see how they like it at the various stages. To "subject them to the action of heat" they must be put into tubes, hermetically sealed with a blowpipe. The tubes containing the vibrios must be boiled for half an hour. Some tubes at 212° F, some at 300° F, some at 400° F, and some at 500° F, and having been boiled for the required time, must be left to cool. When boiled, the tubes can be put away for (say) twenty-four days. Now, if the boiling has killed our little pets, there will not be any left in the tubes when we open them; but, if the boiling has not killed them, they or their descendants will still be there. The result will be as follows:—The tubes boiled to 100° will still contain plenty of life, those boiled to 212° will contain some life, and those tubes heated to 300° will contain of the common vibrios only a few, but several small black ones. In the tubes heated to 400° and 500°, even the small blacks will have gone; so that, in making experiments with our pets, we must not exceed a temperature of 300°. They will disappear at about 350°.

What does the above teach us it may be asked? Why, it teaches us this,—that vibrios the most active agents in effecting the decomposition of albumen are animals; that, they do not come of themselves but are produced from germs; that a temperature of about 350° is necessary to kill them and their germs; and, further, as a consequence, that heat is of no use for disinfecting purposes until it reaches 350° F.

The study of vibrios to those who believe in the Darwinian theory of the descent of man, will enable the student to "try back" to his very first progenitor. If man is descended and improved from something else, it is only logical to suppose that something else came from, and was improved from an antecedent something else, and so on, until by tracing back, we come to "protoplasm," as our first ancestors. There may be a good deal in this, for as amongst mankind, so amongst vibrios, we find long and short, and white and black families. Doubtless, the little darlings about whom we have been especially writing—the "small blacks," are the ancestors of "the irrepressible nigger." But what is a vibrio like? Well, in plain language, he resembles a little tadpole more than anything else, but a pretty good microscope is necessary to examine him.

KITTY.

BY AUSTIN DOBSON.

Blooming as a rose,
 Plump as Dolly Varden,
 Pretty Kitty goes
 Down the little garden,
 Smiling at her thought—
 Would that there were any
 Like it to be bought,
 Kitty, for a penny!

Dapple, solemn-eyed,
 Dozing in the meadow,
 Dapple, with her hide
 Sleeker in the shadow,
 Lazily elate,
 Listening for the latch's
 Clink upon the gate,
 Quiet Dapple watches.

Ruminative Dap!
 Little Kitty pats her,
 Kitty kisses Dap
 (Only think of that, Sir!),
 Bends her face to milk,
 Still the thought upon it—
 Is it gown of silk,
 Kitty, or a bonnet?

Nestled in the sleek
 Cushioning of Dapple,
 Still you see a cheek
 Rosy as an apple;—
 Nay, a critic eye
 Well might call the flushing
 Even redder — Why,
 Kitty, you are *blushing!*

Fie, you're too profuse :
 Blushing's very graceful
 Kept within abuse,
 Kitty—but a faceful !
 Tell us, for you make
 All our wonder busy,
 Busy, for your sake,
 Whisper it—Who is he ?

Ah, if I were Bard,
 Classical and witty,
 It would not be hard
 Just to draw you, Kitty !
 I should make of your
 Milking-shed a grotto,
 Powder you, be sure,
 Patch you *à la Watteau* !

Or, if Themis there
 Were a Southern water,
 This, Sicilian air,
 You, a shepherd's daughter,
 Underneath a beech,
 Then, *puella mea*,
 I should pipe you each
 Grace of Galatea.

But, I serve a muse
 Homelier than pretty,
 And my Syracuse
 Is a smoky city,
 Therefore, *fauts de mieux*,
 Take this little ditty,
 Scribbled off to you—
 Like me for it, Kitty.

SCURVY.

ALTHOUGH the *Nautical Magazine* does not profess to treat of matters medical, the disease which forms the heading of this paper is well known by sight to some readers, and by repute to many more, so that no apology need be given in recording signs, symptoms, causes, facts, and circumstances relating to a malady that was once the bane of the Royal Navy, as well as of the Mercantile Marine, but is now, as is believed, slowly and surely passing away from both services.

The earliest authentic account of sea scurvy occurs in the narrative of Vasco de Gama, who, in the year 1497, discovered a passage to the East Indies by way of the Cape of Good Hope. In this voyage about 100 out of a crew of 160 men died of the disease. Cartier, Drake, Cavendish, Dampier, and other celebrated navigators, all give extended descriptions of scurvy, and there can be no doubt that its miserably fatal effects crippled their laudable energy as discoverers to a very considerable extent. The account of the second voyage of Cartier to Newfoundland, in 1535, records that after an absence of six months, there were not 10 healthy men out of a complement of more than 100, and that 25 deaths had occurred. A narrative compiled by Richard Walter, M.A., from the papers of Lord Anson, shows that, during the expedition of that commander to the South Seas, in 1740, and subsequent years, the *Centurion* lost 292 men, and the *Gloucester* three-fourths of her crew. And, preserving chronological arrangement, we may observe, paranthetically, that Captain Cook started about the middle of 1772, in command of the *Resolution*, with a crew of 118 men; sailed round the world, and, after a voyage of three years and eighteen days, returned home, having lost only one of his crew by disease. Scurvy made great havoc among the seamen of the Channel Fleet, in 1780, and after a cruise of about three months, the Admiral came into port with no less than 2,400 sick men. In the following year it prevailed to an equal extent in the West Indian squadron, then commanded by Lord Rodney, and, in 1795, the disease again spread with great virulence among the sailors in the Channel Fleet. At this time Sir Gilbert Blane, then holding the rank of Medical Director General of the Navy, inaugurated several improvements in the victualling of the fleet, founded chiefly on the presumed anti-scorbutic virtues of fresh vegetables. The result was eminently successful, and, in the course of the same year, an Admiralty order was issued, indicating a fixed and regular supply of

lemon juice for all men of the Royal Navy serving afloat. In the supplement to the Navy article in the "Encyclopædia Britannica," it is recorded that between 1779 and 1813, the mortality in our hospitals and fleets had diminished to the extent of nearly 75 per cent. From that time scurvy has been, comparatively speaking, unknown in the Royal Navy, and there are many medical officers of that service now alive, who have not seen a case of the disease.

British shipowners were, however, slow to see the advantages that must follow from assisting to keep their crews, as well as their spars and gear, in good condition, and for some years after, scurvy continued to be the scourge of the Mercantile Marine, as the statistical records of the *Dreadnought* Hospital Ship sufficiently attest. A clause was introduced into the Merchant Shipping Act of 1854, directing that a supply of lime or lemon juice, amounting to half an ounce per man per day, during the voyage, should be put on board all foreign-going ships (with some exceptions), for the use of the crew. We have no definite statistics as to scurvy in the Mercantile Marine immediately antecedent, or subsequent to, the passing of the Act, but there is little doubt that, at the outset, much benefit accrued to sailors on long-voyage ships. Indeed, the evidence of Mr. Busk, the distinguished surgeon, who then held the appointment of Chief Medical Officer to the Seamen's Hospital Society, is to the effect that, from the date of the passing of this enactment, a great diminution in entries for scurvy occurred. Little or no attention was given to the subject from this time to 1863, when a considerable and progressive increase was observed as to entries for scurvy into the *Dreadnought*. The Marine Department of the Board of Trade, therefore, in accordance with the terms of Section 14 of the Merchant Shipping Act above referred to, instituted an official enquiry whenever a vessel was found to have returned to the United Kingdom with a scurvy-laden crew. The main result of these enquiries went to prove that the provisions of the Act above quoted were not sufficiently stringent, inasmuch as bad or adulterated lime juice was constantly shipped, and that through no fault of the owner or master. Solutions of citric, sulphuric, and other acids, as well as mixtures containing no anti-scorbutic element at all, were supplied, sent on board, and served out at irregular intervals. A large amount of positive evidence on this head was collected, and the result appeared in the "lime juice" Sections of the Merchant Shipping Act of 1867, introduced into the House of Lords in the session of the previous year by the Duke of Richmond, the then President of the Board of Trade. They provide for a proper supply of pure lime and lemon juice, at the rate of an ounce per man per day, which indicates double the quantity formerly

ordered. It is proper to submit in this place, for the information of our readers, the scurvy statistics of the Seamen's Hospital Society, three years before and since this Act came into operation :—

Scurvy.						
Admissions ...	1865	From British Vessels	101	From Foreign Vessels	1 ...	102
	1866	" "	96	" "	5 ...	101
	1867	" "	90	" "	4 ...	94
	1868	" "	64	" "	10 ...	74
	1869	" "	31	" "	9 ...	40
	1870	" "	30	" "	21 ...	51
	1871	" "	24	" "	16 ...	40

I am not at all prepared to assert or to maintain that the very favourable figures above quoted are to be placed entirely to the credit of legislation and unadulterated lime juice. The minds of shipowners and shipmasters have been gradually "educated" (as Mr. Disraeli would say) to the proper contemplation of this question, whether viewed from a commercial, sanitary, or philanthropic aspect, and there is little doubt that being, by this time, well informed as to the many minor, as well as to the few chief, causes of scurvy, they have during the past few years, made some alterations in the diet and accommodation of seamen on board ship. And if the palate and the proclivities of the sailor can be properly educated, there is no reason why special anti-scorbutics should not be expunged altogether from the Mercantile Marine of this country. Preserved provisions, of all kinds, and of very good quality, steam, and the Suez Canal, should surely assist to stamp out speedily from our Merchant Shipping Code clauses which, at the best, do but enforce the use of "an antidote for a poisonous diet." But some think that anti-scorbutic legislation requires to be increased, rather than diminished, when (as was the case some few weeks ago) we hear of the arrival of a vessel, direct from Odessa, with 4 hands out of a crew of 10, all told, *hors de combat*, from scurvy.

It is a matter of considerable regret that the vast and varied experiences of commanders in the Mercantile Marine on this question have never been recorded, collected, and epitomized. Ship captains are too much occupied with direct and ever-recurring responsibilities, ashore and afloat, to play the doctor or the medical observer in any other way than ministering to the wants of those of their crews that may be sick during the voyage. I have received much valuable information from masters of ocean-going ships on the subject of scurvy. Such information has been given most courteously and most willingly, and has greatly aided to supply any evidence that might have been wanted as the causes of the disease. But I am sure that much more has occurred during the last half century as to scurvy afloat, the circumstances of which we know

nothing, and it is possible that this may catch the eye of an old commander, who will wink and say, "Ah! he don't know everything." Most probably not. But, by so much the more is it the interest of all concerned in commercial marine matters, to record and to retail all facts and observations that bear upon this important question. For, if means were taken (and such means are provided in the 10th Sec., of The Duke, Richmond's Act) to send only healthy men on board our ocean-going ships; if lower forecastles were abolished, and the old salt meat scale altered, the lime juice clauses of the Act might be done away with, because we should then hear very little about scurvy in the British Mercantile Marine.

"A MARINE REFORMATORY."

THE following is from the *New York Sailor's Magazine*. Our readers will discover that our Cousins are in much the same fix as we are as regards the disposing of their street boys, and that, like some Englishmen, they think them good enough for sailors. We take exception to this. The very title of the article, "A Marine Reformatory," is repugnant to seamen. We see no reason why the honorable profession of a sailor should be degraded by assuming that a street boy is good enough for it, when he is not good enough for anything else. We think that by a careful selection out of street boys some may be found of a sufficiently high standard to be fit for sailors, and we have no reason to doubt that the boys of the *Mercury* were tried and selected boys. That amongst street boys embryo sailors may be found is proved. With one point in the following statements we entirely concur—viz., that such boys as are of a good moral character, and have been trained in school-ships, ought to be transferred to the Royal and Mercantile Navies. We have every sympathy with little chaps we see in our "training"-ships, although they are often more like Ostend rabbits than anything else; and we look forward, not to the manning of our ships with these dear little fellows, or with boys who are of necessity compelled to seek refuge in, or are "consigned" to, training-ships "by the Court," but by boys of a better class altogether. Boys who have a good physique and home associations, and who belong to respectable, if poor parents: or, at the very lowest, who are not "consigned" to the training-ship because of their vagabond life and utter

helplessness. Let us by all means rescue the homeless—let us do what we can for them in every way—but in doing so, do not let us assume, as is too often the case with some advocates of training-ships, that every boy we help is to be made into a sailor.

The cruise of the *Mercury* speaks volumes in favour of trained boys, but does not at all prove that boys who are to be trained ought first to be boys who are “consigned.” We fear that our excellent contemporary gives the British Government too much credit as regards the training of boys. We are not aware of the existence of any organised system under the direction of our Government for the training of boys for the British Mercantile Marine, although we are most strongly of opinion that such a system ought to exist; and regret deeply that the representatives of our sea-ports in Parliament have not, as a body, thought fit to bring it about:—

“For the past few years the Board of Charities and Correction have had on their hands considerable numbers of wild, reckless and semi-criminal lads, who were either consigned to them by the Courts, or sent to them by parents unable to control their children. In former years the Board made the best possible disposition of the orphans among these, or of the more controllable portion, by placing them, through the machinery of the Children’s Aid Society, on farms in the West. Through this simple process, these unfortunate children were at once put in the best portion of the Union, at the most healthful occupation, and with the brightest possible prospects before them,—all this being accomplished without any expense at all to the Board. Gradually, however, the influence of the Roman Catholics increased in all our City Departments, and, at length, from their impulse, this benevolent and practical method of relief was abandoned under the fear that the children thus placed might become Protestants.

“To meet the increasing pressure of destitute children thrust upon their hands, the Board founded industrial schools upon Hart’s Island; but these not proving sufficient, the former President and most active member of the Board, General Bowen, suggested a reformatory branch, an experiment which has since proved remarkably successful, and among the multitude of wild, adventurous boys in such an institution there are always a number better fitted for the active and perilous life on the sea than for any occupation on shore. The bustle and incessant duty on ship, the occasional hard work and adventure, gave play to their physical forces in a harmless and useful way. They enjoy the variety of a voyage, they learn every day the practical science of seamanship, and fit themselves for a profession *which now has few apprentices training for it.* General Bowen had wisely looked at the great defect of our

Merchant Marine, that of well-trained native sailors, and the increasing difficulty of procuring good sailors for our national vessels. He saw that the British Government was compelled to resort mainly to school-ships to man its vessels of war, and he hoped, by a good system of naval training, to begin the remedy of both defects, and at the same time to save these active lads to society. Massachusetts had indeed tried a similar experiment, but not with crowning success.

“But it is believed that the difficulty there, was in making the school-ship too much a kind of private yachting vessel of the Commissioners, and in not putting the lads under a sufficiently strict discipline, and trusting to them for long voyages. That the New York experiment was a success, in a naval point of view, is sufficiently proved by a pamphlet just issued by the Commission, giving an account of a cruise of some three months of their School Ship *Mercury*, last winter, to the coast of Africa. Through all this long cruise some 250 boys managed this large vessel, carried her safely through storms and calm, with but one accident and no death from disease, and at the same time were able to execute a series of valuable scientific soundings and dredgings of the ocean bottom under the tropics. This pamphlet contains the results of the investigations which have been forwarded to Dr. Carpenter, who has supervised similar valuable researches in the North Atlantic by the British Government. They have been a most useful confirmation to him of his great theories of a bottom current from the Arctic Sea to the Equator of cold water, and a return surface current of warm water, besides aiding in the knowledge of the forms of life on the ocean’s bottom in the tropics. Thus have our New York gamins aided in the tropical seas the progress of science, and at the same time been cured of their vagabond habits, and prepared for a most useful but neglected profession.

“Twelve of the school-ship graduates have already entered the Navy and others the Merchant Service. No doubt an Act can yet be obtained from Congress giving the Commissioners power to transfer boys who have been trained in the school-ships, and are of good moral character, directly to the naval service. At present, so much is left to the discretion of the naval subordinates in this port, in this matter, that but few are thus transferred. The experience of *the British Government proves how soon our own Government will have to look to school-ships for supplies of men.*”

BRITISH METEOROLOGY.

THE ordinary observations of wind, the rough notations of weather, together with records of readings from indifferent barometers, furnished by ships' log books, sufficed for the investigations which led to the discovery of the law of storms. More precise observations and especially careful readings from accurate barometers brought out the important generalisation that the so-called law of storms is the law of all winds. Thus scientists have been forced, step by step, to the inference that no accurate and abiding progress can be expected from meteorological research unless accurate instruments, precision in observation, and systematic methods are employed. Vigorously and enthusiastically pursued by a large number of volunteer observers both at sea and on land, British meteorology was nevertheless a desultory and incoherent system of observation without proper guidance, though, indeed, control could never have succeeded in harmonising the faulty facts and doubtful figures accumulating in overwhelming masses. An entirely new system of observation, based upon uniformity, has, thanks to the Meteorological Committee, reformed all this, or rather it has been super-added to it, and bids fair gradually to become the supreme and authoritative method of research. It is based upon seven observatories, furnished with comparable self-recording instruments, situated so as to adequately represent almost the whole area of the British Isles, and in conjunction with which observers ashore or afloat may work in unison, provided that they employ proper instruments and follow prescribed instructions. The result already is that we have at length attained to a systematic and reliable record of British meteorology in the *Quarterly Weather Report* of the Meteorological Office, which commenced with the year 1869. Some trifling alterations were effected for 1870, so with that year we will commence the notices which we intend to give of this official weather record.

It consists of graphical representations of the continuous curves of barometer, vapour tension, dry and wet thermometers, direction and velocity of wind. Such condensation is effected by this mode of publication that the registrations from the seven observatories for five consecutive days are given on a single folio page. Instrumental and time scales are engraved with the curves, by which their values at any time can be measured, and no pains is spared to render them as accurate as possible. These curves are accompanied by a descriptive account of the weather, compiled from them and from registers kept at

various places in the British Island, and by observers in adjacent seas. The Atlantic steamers and certain Greenland whalers have been especially useful, and the observers get proper acknowledgment of their information whenever it is made available. Tables are appended of five-day means, monthly means, and extremes of pressure, temperature and rain-fall. Similar tables for wind should also have been computed, and why they are absent we cannot say.

A study of the Report enables us to give a summary of the weather over the British Isles, such as could not be obtained from any other source. During *January*, 1870, the atmospheric pressure was above its average value. Its mean distribution was such, that on the whole the pressure was greater in the south-east than to the north-west of our islands, a condition from which we may infer prevalent S.W. winds. The curves prove that such winds prevailed for 18 days. The range of the barometer varied from 1·41 inches at Falmouth to 2·15 at Aberdeen. At Valencia, over 6 inches of rain fell; over the Irish Sea, about 8 inches; while the east coast had only 1·5 inches. The temperature was very nearly at the average due to the month; at Valencia the mean was $44^{\circ}\cdot 8$; at Falmouth, $48^{\circ}\cdot 4$; at Glasgow, $86^{\circ}\cdot 9$. The maximum temperature $54^{\circ}\cdot 4$ occurred at Falmouth, the minimum $22^{\circ}\cdot 8$ at Stonyhurst. The range of temperature varied from $27^{\circ}\cdot 6$ at Kew, to $18^{\circ}\cdot 7$ at Glasgow.

In *February* there was a slight deficiency of pressure, which was more evident in the south than elsewhere. The least pressure, 29·76, was at Valencia, whence the monthly isobars spread out till on the east that for 29·9 inches is nearly parallel with the coast. From this condition of pressure winds should be prevalent from S.E. to S.; the curves show S.E. winds to have prevailed for seven days. The greatest range of the barometer was 1·75 at Aberdeen, the least 1·00 at Kew. The rain-fall at Valencia was 4·6 inches; over the Irish Sea, 8 inches; the south-west of England had nearly 4 inches; but the east coast had only 1·5 inches. The temperature was below the average, especially in Ireland, where the defect was $2^{\circ}\cdot 4$; at Valencia, the mean was $41^{\circ}\cdot 7$; at Aberdeen, $85^{\circ}\cdot 7$. The maximum $58^{\circ}\cdot 2$ was reached at Kew, the minimum 16° at Glasgow. The range of temperature was $81^{\circ}\cdot 8$ at Kew, but only 22° at Valencia.

In *March* pressure was considerably above the average, and it was greater on the west of Ireland than on the east of England, giving northerly winds which prevailed for 12 days. The greatest range of the barometer was 1·71 at Armagh, the least 1·00 at Kew. In the south of Ireland and south-west of England nearly 8 inches of rain fell; on the east coast, 1·5 inches; in the north of Scotland, less than 1 inch. Temperature

was at its normal value— $45^{\circ} \cdot 6$ at Valencia, $89^{\circ} \cdot 1$ at Aberdeen. The maximum 59° was again recorded at Kew, the minimum $22^{\circ} \cdot 3$ at Aberdeen. The range at Kew was $36^{\circ} \cdot 4$, but only 23° at Valencia.

During the quarter the oscillations of temperature were very rapid. We may specify as warm periods January 1 to 15; February 25 to March 1; and as cold ones, January 21 to 30; February 10 to 19; and March 22 to 31.

The study of storms is an especial feature of the Report, while scarcely any notice is taken of floods and draughts, events which so materially influence agricultural operations. Then, again, the aspect of the sky, whether overcast, cloudy, or clear; also the condition of the air with respect to fog and mist require consideration in anything like a complete record of weather, and should be summarised in some way for use with the monthly instrumental mean values. These matters have an interest from the agricultural point of view, and with reference to prevalent diseases.

As regards the storms, it is remarkable to find that they nearly all travel eastward; thus on January 3rd, a S.E. gale, which commenced at Valencia, reached Holyhead five hours later; on the 8th, a severe S.W. gale passed from Valencia to Hamburg in thirty-six hours; on the 18th, a S.E. gale advanced from Valencia to Aberdeen in seventeen hours; and on the 27th a S.E. gale commenced at Valencia and broke out at Yarmouth three days after, so slow was its rate of advance. In contrast with the movements of these gales which accompanied barometrical depressions, may be placed that of an area of high pressure on January 18th:—"The barometrical reading of $30 \cdot 9$ inches was registered both at Haparanda and Hernosand, in the Gulf of Bothnia, with a temperature of -22° Fahr. at the former place. The easterly wind was blowing freshly over Norway, and had extended to our own south-east coast, causing a depression of temperature and a very dense fog at many stations." "The area of high pressure advanced in a south-westerly direction to the south of Norway, so that an anti-cyclonic movement was developed in the air over the west of Europe on the 20th, the wind sweeping from N. and N.E. over the Baltic, to E. over France and our southern coasts, and to S. and S.W. at Sandwick and in the north of Morway, where a S.W. gale was reported at Christiansund and Bodö—in fact, nearly up to the North Cape."

The gales of February were of extraordinary severity. "On the 3rd the barometer had risen to $30 \cdot 6$ inches in Central Russia with a temperature of -21° Fahr. at Moscow, light easterly winds and a clear sky; a state of things which was destined to exercise a great influence on our weather for the next fortnight." "On the 5th, the mean height for the day of the barometer at St. Petersburg was $30 \cdot 988$ inches." At "this

time a serious depression was existing over the Atlantic at a distance of less than 500 miles from the Irish coast, with a furious gale," which was experienced by the *Tarifa* (Captain Murphy), the *City of Cork* (Captain Allen), and the *Weser* (Captain Wenke). The barometer fell below 28 inches, and the *Weser* had to heave-to for five hours. The *Tarifa's* barometer fell *nearly two inches in ten hours*. The *City of Cork's* in one hour fell 0·68 inch. The absolute minimum was recorded by the *Tarifa*, 27·88—a reading almost unheard of in these latitudes; and as at the same hour, 5th, 7h. 30m. p.m., Greenwich time, the reading at St. Petersburg was above 30·99 inches, there was an *absolute difference in atmospherical pressure amounting to 3·7 inches of mercury between these two points*, distant from each other about 1950 geographical miles. A disturbance of atmospherical equilibrium on such a gigantic scale is very remarkable. The facts appear to show that the gale which ensued on our coasts was to the full as much to be attributed to the advance of the high pressure westwards from Russia as to that of the low pressure eastwards from the Atlantic. In fact, the latter never reached our shores at all, for although the *Nestorian*, Captain Aird, on the morning of the 6th, in the latitude of Greencastle, and in 16° W., reports a reading of 28·25 inches, the lowest reading recorded by our barograms was about 29 inches at Armagh, so that the deficiency of pressure had been reduced nearly to the extent of two inches between the meridian of 25° W. and our coast." The gale was felt at Valencia on the 5th, 1 p.m.; at Falmouth, 5th, 11 p.m.; and at Glasgow, 6th, 10 a.m.; at which time the barometer at St. Petersburg had reached its maximum 31·14 inches, probably the highest authentic reading on record.

On February 11th, there was an E.N.E. gale, with barometer 30·88, at Haparanda, and 29·49 at Oporto. The force of wind at Yarmouth averaged 55 miles an hour for 88 hours; at Guernsey, 70 miles an hour all through the night. The gale lasted the two following days.

The following table shows the number of hours during which the wind reached the velocity of 80 miles or upwards per hour, irrespective of direction, during the entire quarter:—

OBSERVATORY.	JAN.	FEB.	MARCH.	OBSERVATORY.	JAN.	FEB.	MARCH
Valencia ...	182	140	99	Falmouth ...	133	141*	59
Armagh ...	81	32	4	Holyhead ...	226	247†	195
Glasgow ...	10	53	19	Stonyhurst...	16	31	13
Aberdeen ...	34	105	67	Kew ...	19	46	6
Sandwick ...	126	194	146	Yarmouth ...	90	230	74

* The anemograph was stopped for 72 hours for repair, during the greater part of which time a N.E. gale was blowing.

† The anemograph was out of order for 25 hours; a N.E. gale was apparently blowing all the time.

From this table it appears that Stonyhurst recorded less than a tenth of the amount registered at Holyhead; and the difficulty of wind comparisons on land is amply exposed.

FOK'S'LE YARNS
ON BOARD THE "OCEAN WAVE."

BY W. F. PEACOCK.

(*Continued from our March Number.*)

II.

WITH THE COASTGUARD.

"Before I joined this craft," commenced Rufe, "I served in the *Atalante*."

Rufe Underwood, let me say, in parenthesis, was decidedly the best educated of all the crew. Not generally talkative, and when his turn came to spin a yarn he went for it, as the Yankees observe. His real name was, of course, Rufus, but we "razeed" it. Rufe was every way superior to his rating of A.B. He never spoke about his family, but, from occasional reference to his experiences, we could see that Rufe had been a "rolling stone." For some years agent-in-advance to a travelling menagerie, he had subsequently pursued the motley and precarious life of a strolling player; had served through the Sepoy rebellion, and received a medal for Lucknow; had gone out to New York as understeward; had (with a keen relish for "life") made one in an expedition to hunt the Indians; had worked his way somehow to San Francisco, and there shipped in a whaler which chanced to put in; off Petropaulovski got wrecked; was picked up, with some others, by a British vessel; landed ultimately at Plymouth; made a voyage or two in the *Atalante*; and afterwards, as he said, joined us. And this brings me to the starting-point.

"When I was discharged from my last ship," said Rufe, "I went down into Cornwall to see an old friend; and accident made me witness to an act of bravery which deserves to be known far and wide. And, what's more," continued Rufe, "while I had nothing to do with it in any way, and, therefore, speak altogether without interest, the date's so

recent that it will be remembered by all of you, and I shall not make even a secret of the name. My friend was a well-to-do farmer of the district, and we'd known each other in brighter days—but there's no call to talk of that—and, you see, being just paid off, I'd not only money in my pocket, but a good suit of clothes on my back. Whatever I may be, at all events I looked a gentleman. My friend and I went out one night for a breath of fresh air. We had sat over the fire until we were weary of it, and so, although it was nearly midnight, we took a turn on the cliff-tops near to his homestead. There was no visible moon, but the night could not be called dark. You see, it was that sort of obscurity which impresses one with its clearness; dark clouds, but not dense or threatening. None of that driving scud so commonly betokening a storm; an unusual quietness in the atmosphere, and the hidden moon diffusing a certain light as (I may say) at second-hand.

“As my friend the farmer and I paced the cliff foot-path, now gazing at the almost perpendicular crags, and now remarking the sea, whose waves made mournful music, low, yet distinct, like some monotonous pathetic tune, we came upon a wrapped-up figure, leaning on a broken fence, and seemingly deep in thought.

“‘Good evening, sir,’ said my friend—I may as well tell you his name: it was Kitto.

“‘Evening to you,’ said the stranger, scarcely looking towards us; ‘Oho! is it *you*, farmer?’

“‘Bless my soul,’ said Kitto; ‘why, I'd never have thought to see you here, sir, on such a beautiful night.’ (And he whispered to me, ‘It's the Inspector of the Coastguard.’)

“‘As to that,’ said the inspector, laughing lightly and pleasantly, ‘you know, Kitto, there's a certain person goes about at all times seeking whom he may devour, in search of his prey, though not exactly praying for it! I go to work to save mine from the waves' jaws, though the day has been when many a crag about here was the foothold of a wrecker. God forgive the fiends! as if misfortune weren't enough without murder! Well, it is a beautiful night, farmer, but it's too beautiful!’

“‘I thought storms, and fogs, and such things were more in your way, sir,’ said Farmer Kitto. ‘Shouldn't have expected a fine night like this was, when it's so soft and warm that the pixies* might be out a-dancing.’

“‘Look here, Kitto!’ said the inspector; ‘the night's right enough at present, but I've been suspicious of it for some hours. There's

* Fairies; so called in Cornwall.

electricity in the air, and I note other signs of a coming storm. It's like a man who smiles so much he shows his teeth; his very excess of pleasantness tokens his insincerity; he's not likely to last, farmer! I've consulted my barometer, and It never deceives me.'

" 'Maybe you're right, sir,' said Kitto; 'but I can't see it. Experience is much, but I don't perceive any indication of a change. With all respect to your judgment, sir, you'll find I'm correct.'

" 'Each for himself, and God for us all, farmer!' laughed the inspector. 'A true man is led by his own sense of duty. Mark what I say now! There's a storm brewing at this moment that will make itself heard along the coast before you are two hours older, and if I did not feel assured of it, I should not be here. But, pleasant dreams to you!' said he, as he strode away; and we heard the inspector murmur to himself, 'No rest for me to-night.'

" My friend and I returned to his house. We felt so elated by the combined beauty of the night and the conviction that our view of it (for the farmer's opinion was mine) must be correct, that we drew up the round table to the kitchen fire, and sat down for a cosy drink and smoke. Well, we were getting exceeding comfortable with the whisky and pipes, and had passed to quite other subjects of chat—indeed, we'd forgotten the inspector for the time—when, just after Farmer Kitto had mixed what he styled a 'stiff 'un' previous to turning in, my ear caught the sound of coming tempest. No mistake about it! The angry, threatening growl that preceded a roar. I mechanically put down my own half-emptied tumbler.

" 'Hear that,' said I; 'the inspector was right after all!'

" I tell you, in less time than it takes to repeat, the gale came upon us until the massive chimney shook, and the outside door seemed about to be blown in. A very hurricane! We listened, and by-and-bye Kitto distinguished what he thought to be a signal-gun. 'There's a ship off shore!' said he; 'let's see what it is.' And with that we put on our rough coats and started. Such a night! The sky all changed in that short time; an unnatural light of a sickly yellow-green tint making the sea and shore visible; a sort of bilious radiance, not dull, but so terrible to look upon that its brightness chilled one; great, uneven-edged black clouds driving over the face of the angry heavens, like burnt ships' blackened hulls before a raging tempest. Hell itself seemed to have let loose its fiends, for the driving clouds assumed shapes like gigantic beings torn asunder and scattered by a fearful power; lost souls leaping upon each other in the awful race to escape the whip of the Destroyer. And while the lightning ever and anon lit up earth, sea, and sky as bright as day, seeming to hold a flaming torch to show the place

to strike, the deafening thunder rolled at short intervals like a park of the heaviest artillery, each volley coming nearer us, until the crash seemed to be immediately above our heads.

“ We could scarcely keep our feet when we got to the cliff-tops. We could see the rough perpendicular crags beating back the savage billows as they hurled themselves against the coast, the voice of the storm at sea hoarsely cheering them on ; and the flashing lightning showed, in strange contrast to the sickly electrical radiance overhead, the seething pure-white crests of the mad waves. After each attack, the hurricane swirled and quivered before returning with renewed strength and fury ; and, perhaps, the short pauses between the meeting of heaven and earth were most impressive of all. The very hush bore with it additional terrors of the coming blow !

“ Though everybody else had been taken by surprise, we found, when we reached the point of observation, that the inspector had not only foreseen the storm, but provided for it ; had issued orders that none of the coastguards should turn in for the night, and had placed a special look-out to report any light observed at sea. When we arrived at the spot where the inspector stood, with men about him, we found the rocket apparatus all ready, and he himself as busy as a bee, though, with all his energy, cool as a cucumber. And there's a deal in self-possession, messmates,” said Rufe ; “ if an officer shows it, his men catch it from him.

“ I suppose all here know what the rocket apparatus is, so I needn't enter into particulars. I'll only say that, owing to the inspector's foresight, nothing was wanting. When we reached the spot—farmer and myself—we found the station-cart (from the rocket depôt) with its necessaries—lines, and hawser, and ‘ whip ’ of Manilla rope ; sling life-buoy for the man to be rescued, with petticoat-breeches in which to place him before leaving the vessel ; double-block-tackle purchase ; ‘ traveller ’ to work with the sling ; loose spars to form the triangle for the hawser ; an ‘ anchor ’ to sink in the ground, and so steady the the tackle-purchase ; with tarpaulins and heaving-sticks, and many other things that might be required.

“ How the wind did swirl and roar, while the billows dashed against the rocks, and the spray leapt up in gleaming clouds like ruffled fleece ! From our position, hundreds of feet above the boiling surf, we could see the long dark line of cliffs, now obscured and made more terrible by the sickly yellow-green light, and now lit up by the vivid electric flashes. The echoing caves added to the clamour of the ocean ; shorewards, ever so far, deep, hollow voices cried aloud to each other as though to take courage against the onslaught of the heavy waves and beat them back.

There was a narrow path to the beach, but, in that furious tempest, no bird, much less man, could have followed it and lived; and, indeed, opposite to where the vessel struck the cliffs were almost perpendicular. It's a savage spot under any circumstances, is Death's Head, but on a morning like that it's something indescribably fearful. And 'twas in the bay below that we could dimly see the distressed ship; see her slowly but surely drifting in to where the rocks showed their sharp hungry teeth; drifting, drifting in, with heavy seas every instant breaking over her deck, her masts gone, and only the jagged stumps left. Drifting, drifting in, doomed for destruction! What those poor fellows on board of her felt, God only knows: the vessel's slow, but certain, approach to the jaws of death made their suspense the more terrible!

"Blown about by the wind and wet through by the dense rain, which had never ceased falling, the Inspector of the Coastguard kept to his post, and issued his orders as though he were proof against the elements."

"And so he was—in pluck!" cried Sheky Jenkins.

"Right you are, mate," said Rufe. "He seemed to do all the work himself, and, as I stood near him, I heard him refuse the offered assistance of a volunteer, and I remember his words. Brushing back his wet hair from his face with one hand, while arranging a line with the other, 'Thank you, my lad,' said he, 'but the responsibility must be mine! I cannot allow anybody else to share it. And I'll save those poor fellows yet!'

"Indeed, there seemed little hope of doing so. The ship must evidently break up soon. No timbers could resist the constant attacks of such tremendous waves; and hitherto it had been impossible to throw a line with any certainty, owing to the indistinct position of the ill-fated barque. What with the heavy seas and fitful light, she couldn't be seen for two minutes together. The inspector had calculated his chances; patiently waiting until now, the vessel forged ahead towards a jutting point of high rocks which reflected the vivid flashes of lightning, and furnished a sort of mark in the dim distance. Between us and this point the crags towered up tremendous and overhanging. We could make out that the ship was deep in the water, and washed from stem to stern. Amid breathless excitement, the inspector directed and fired the first rocket. There he stood, alone on a slippery projecting crag, yet steady as the cliff itself. The rocket, well-directed, fell across the vessel's stern, but instantly disappeared; a heavy sea had washed it off, and the first hope was gone. We could perceive the captain and his men (there were six of them) holding on like grim death by whatever offered itself, but constantly hurled here and there by the furious waves.

The inspector was visibly affected, and, though stern of face, we perceived that his lip quivered. He had children of his own, and the probable orphans of those doomed sailors rose before him. We saw him glance almost despairingly towards the mighty precipitous crags, full 800 ft. high, and then towards the labouring ship; but there was no hesitation with him. Almost unable to maintain his foothold, and half-blinded by the rain and spray, he quickly managed to place another rocket in position, and, after a long and careful sight of the desired point of aim, fired it. Then, above all the din of the elements, there rang out a British cheer that did us all good; for the cool officer had lodged his line securely. It fell between the stumps of the masts, almost in the crew's hands, and was immediately seized. Just at that moment, on the very heels of our cheer, a cry arose: '*The vessel's sinking! She's under!*' But she emerged when expectation seemed dead. And now it was seen what one earnest, experienced, and resolute man could perform. The inspector's orders rang out sharp and clear. His soul was in each word, and, with the certainty that he had established a line of communication, all emotion gave place to confidence and zeal. He seemed to move his men by his will; they caught the contagion of his example. No precaution was omitted. One brave volunteer coastguard was lowered over the cliffs to keep the sailors from striking against them when reaching the shore; and it was no joke to be let down from that giddy height, with the boiling ocean below. But, indeed," said Rufe, "the inspector had drilled his volunteers until you would have been puzzled to find their like. As to courage, why it was (or would have been) rash—positively a fine-built hot-headed fellow offered to swim out with a line when there was some doubt of reaching the vessel! He couldn't have lived two minutes in that sea.

"The wind was deafening. Orders had to be given by *sign*. When the breeches-buoy received the first sailor and he was safely hauled in the people seemed half mad with excitement. The ship's captain was the last to quit her. A noble fellow, when things seemed at their worst he calmly directed his mate what to do should he perish. At the moment he came ashore (with a bad wound, a heavy timber having struck him) the thing was touch-and-go; midway a terrible sea enveloped him. The inspector for once lost his coolness. 'By God!' said he, 'the best man's gone!' Then, the next instant, 'No, by heaven, he's there! All right, my lads, haul away!' And so every soul on board was saved from the jaws of death; and I tell you, mates, I never witnessed an act of greater heroism. Why, nobody but those who were there would credit it at first. Farmer Kitto and I happened to see the meeting of Lloyd's insurance agent and the inspector; and, says the agent, 'Is it a fact you've saved those men?'

"But, perhaps, the best thing was the inspector's modesty. While my friend and I were standing by, many voices offered thanks and expatiated on the noble conduct of that officer; but his reply was, 'Nay, rather thank those who have provided and perfected the rocket apparatus.' As he passed down the street of the town, heads were uncovered and cheers given, and one old man tottered forward to weep and bless him. You see, messmates," said Rufe, "this old man had lost three of his sons at sea, and he knew what it was !

"I'm glad to know too," he went on after a pause, "from a letter I had from Kitto, that the Coastguard Inspector duly received the thanks of the Admiralty and Board of Trade for his manly behaviour; but his greatest reward was in the knowledge that, alone and unassisted, as I may say, he accomplished what elsewhere it required a whole life-boat's crew to perform. Don't you ever hear the rocket apparatus, or those who use it run down. Its the best thing out, and costs no end of money for exercise: and that's why its so effective.

"I've never seen that officer since, and perhaps I never shall," said Rufe. "He's not in the coastguard now, though it's only a few years since the wreck. You see, lads, meritorious acts are noted in high places—that's something for all of us to bear in mind—and he afterwards received another appointment. I only hope he's as hearty to-night as I am !"

"But you haven't told us his name," cried the whole fok's'le.

"Oh, haven't I?" said Rufe. "Well, maybe you had better sign a round robin to Mr. Childers, of the Admiralty, and ask him !"

When Rufe Underwood had finished the foregoing interesting yarn (to listen to which many of the passengers had formed a group round the door of the top-gallant fore-castle) he turned to Paddy O'Hara, and said, "Now, Paddy, my boy, your turn next." "All right," said Paddy, "I'm to the fore, and, by jabers, it's a quare yarn ye'll get from me." And we think our readers will agree with Paddy when they have an opportunity of reading it in our pages.

The above is a true narrative. The gallant officer referred to had to leave the coastguard in the recent reductions; but, as he was still a young, active man, the Board of Trade (during Mr. Bright's Presidency) were able to give him an appointment in the Marine Department.

THE PORT OF PASSAGES VIEWED IN CONNECTION WITH A SPANISH INTERMARINE RAILWAY.

BY OUR OWN CORRESPONDENT AT SANTANDEB.

THE Port of Passages, situated at the extremity of the innermost corner of the Bay of Biscay, on the north coast of Spain, close to France, is a harbour of refuge which nature seems to have scooped out of a rock-bound coast, as an asylum for the storm-driven mariner. It lies about three miles to the east of San Sebastian, which since the demolition of its historic, but latterly useless fortifications, has greatly increased in size and opulence. Possessing only an artificial harbour of small dimensions with an unsafe roadstead for vessels whose size prevents their entering it; the future commercial prosperity of San Sebastian may be said to depend upon the restoration of the Port of Passages.

In the palmy days of Spain, when the South American colonies poured their enervating and blood-stained riches into her lap, Passages was a place of commercial note, sharing with Cadiz the advantages of being the headquarters of the great trading association of Caracas, the East India Company of that day, the only remaining vestige of which is the fine church of Santa Maria, at San Sebastian, built by the shareholders to propitiate the protection of the Virgin Mary. That was in the seventeenth and eighteenth centuries. In more remote times the possession of the Port of Passages (Pasages, as it is called in Spain) gave rise to serious disputes between the provinces of Navarre and Guipúzcoa. Under the House of Austria, Passages flourished as a royal arsenal, and from it sailed squadrons to maintain the dominion of Spain in distant seas when the tap of the Castilian drum followed the course of the sun round the globe. During the Mexican war of independence Passages declined, and, after the separation of the colonies, dwindled into a mere fishing town. Since then the spacious land-locked bay has been gradually filling up with mud and sand washed down by the rains from the hills that surround it on every side. To this process contributes the little river of Oyarzum, which, rising in the mountains of Navarre, flows into the eastern extremity of the estuary of Passages—a scanty rivulet in summer, a torrent in winter.

With the exception of the narrow channel leading into it from the ocean, the harbour is nearly dry at low tide. Fortunately the deposits which have accumulated and led to this result are soft and easily removable by means of dredging.

Towards the termination of the Peninsular War, when British valour, directed by the genius of Wellington, was working out the deliverance of Spain, and the current of hostilities turned northward, the Allied Governments made Passages their principal naval station for the supply of the army, and it was no uncommon sight to see from three to four hundred British, Spanish, and Portuguese ships at anchor in its waters.

Passages has always been coveted by France, and this is one of the reasons why, during so many years, successive Spanish Governments have neglected its commodious haven. Napoleon I. was so impressed with the natural capabilities of the spot for the establishment of a military port at the southern extremity of the coast, which should be to Spain what Cherbourg was to England, that he had it surveyed. The cost of the undertaking was estimated at 50,000,000 francs, or £2,000,000, including the fortification of the surrounding heights, but the Russian campaign put an end to this as well as other grasping schemes for the elevation of France at the expense of her neighbours, and so, too, the attack on Prussia became the Cassandra of Mexico, and Belgium. After this, Passages suffered another dismal relapse until the Carlist War, when the presence of a British and French naval force, with a battalion of Royal Marines attached to the latter for the support of Queen Isabella's cause—requited in 1848 by the reckless expulsion of the British Envoy from Madrid—shed a transient gleam of prosperity on the place. At the conclusion of the contest, Passages again sank into poverty and obscurity, but retaining, as always, the inestimable quality of being the best harbour of refuge in the Bay of Biscay, a natural gift which no neglect can deprive it of.

Napoleon III. also saw and appreciated the Port of Passages. During a summer sojourn at Biarritz he visited it in a steamer, and as the vessel ran through the passage from the sea which opens into the wide-spreading harbour, his Majesty, then in the world's opinion scarcely inferior in genius and power to his uncle, saw at a glance what might be made of such a locality, and remarked upon its capabilities. There is an echo in the words of royalty, and the imperial observations soon reached the ears of Isabella II., now like him, an exile. Always suspicious of the Emperor, and detesting everything French, she is said to have exclaimed to General Narvaez, "He would like to have Passages, but I will better it for Spain!"

Official attention to the long-neglected port was immediately aroused; plans for its improvement were made, and the Foral Deputation, or provincial government of Guipúzcoa, was invited to co-operate in the work of restoration. In 1861, a Commission composed of the Commandant of the naval district of San Sebastian, and two Post captains was

named to draw up a report. They recommended the deepening and clearing of the harbour at an estimated cost of £8,400, including three dredging machines from Scotland of 50 horse-power each, and deprecated compliance with a petition of the Foral Deputation to be allowed to take possession of and cultivate some land which had been reclaimed at the western extremity of the estuary called the Herrera, on the ground that such a proceeding might prove prejudicial, in case the space referred to had to be restored to the dominion of the sea. That the Commission duly appreciated this valuable portion of the harbour, is now shown by the fact, that one of the first works to be commenced is the construction of a dock within it. But the ardour excited in the inflammable Queen of Spain by the words of Napoleon—a name even more hateful to Spaniards than that of “Ferdinand the Unbearable”—soon cooled; and indifference, then forgetfulness, followed, and official interest in the question sank accordingly, until oblivion seemed to close over a scheme, the offspring rather of offended self-love than patriotism. At present the increasing commerce of Spain, (despite restrictive customs laws,) combined with the enterprising spirit of the age, especially in whatever relates to the extension of international communication, has again brought Passages into notice, this time with the prospect of securing solid and lasting advantages.

The Port of Passages promises to become ere long the terminus of an inter-marine railway between the Atlantic and the Mediterranean with Barcelona and Tarragona, and perhaps Alfaques at the other extremity. On the 8th of February, 1870, a decree was issued by the Regent at the recommendation of the Minister of Fomento. It empowered the Deputacion Foral of Guipúzcoa to undertake the requisite works for improving and clearing the Port of Passages, and was an advance in the right direction. Some delay occurred in the discussion of ways and means, and it was not until August last that another step was taken, when the formation of a Company, under the title of “Fomento de Pasages,” was decided upon with the sanction of the Foral Deputation. Ninety-one million Reals currency, say £95,000, has been raised by subscription in shares for the commencement of the undertaking, and there is every reason to expect that it will be prosecuted with vigour from the commencement of May next. In the first instance, the works will be confined to the construction of quays and warehouses parallel to and touching the North of Spain Railway, which passes close by, with a dock in the Herrera or western extremity of the port, a locality already alluded to, including a pier one hundred metres in length. The complete cleaning out and deepening of the harbour will then be commenced, and perhaps the widening of the entrance of the port from the sea, an

experiment of doubtful utility. Two million cubic metres of mud and sand will have to be removed to give the harbour a mean depth of thirty feet at the rate of about tenpence per metre, so that the loan in question must be regarded merely as an instalment towards the total cost of the enterprise, without calculating that of the contemplated railway from Passages to Pampeluna.

The principal aim of the undertaking is to attract to Passages—the only port on the Spanish coast in the Bay of Biscay, except Santander, unobstructed by a bar—the maritime trade of Spain, which now finds its way to and from the southern ports through the Straits of Gibraltar, thus saving the expense, loss of time, and risk attending the ordinary voyage round the Peninsula. Still it can hardly be expected that this inter-marine railway will be able to compete with the old sea route by Gibraltar in the conveyance of heavy and bulky merchandise, such as coals, iron, raw cotton, and salted Newfoundland cod fish.

A continuous line of railway is indispensable for the realisation of such a project. It exists in the junction with each other of the North of Spain, Pampeluna, Saragossa and Barcelona Railways, but not in an entirely satisfactory manner, for apart from the transit having to be performed over the lines of different companies, the North of Spain one is a French concern, as Spanish shipowners and merchants found to their cost when the interests of Bordeaux had to be consulted at the expense of native ports. Emanating from the Pyrenean frontier, the North of Spain line traverses the margin of the south side of the Port of Passages for a distance of rather more than a mile, and after passing close to San Sebastian on its way to Madrid, forms a junction with the Pampeluna Railway near San Sebastian. With these means of transport, merchandise, consisting of entire cargoes, might be transferred at all tides from ships alongside the wharfs at Passages to the railway waggons, and forwarded in a few hours to Pampeluna, Saragossa, Lerida, Barcelona, and Tarragona, as well as the Levant, and in the same manner goods from the south destined for the north of Spain might be shipped at Passages. Nevertheless, there can be no doubt that a railway direct from Passages to Pampeluna, a distance of only forty-two miles, and really belonging to a Spanish Company, or at least not to a French one, is required in order to give the new inter-marine line every advantage, and enable it to compete successfully with that of Cette and Marseilles to Bordeaux. The French line was intended, on the same principles as govern the Spanish scheme, to convey to the south of France, or rather Marseilles, most of the merchandise going from the north of Europe and America to the Mediterranean and the Levant, and likewise Asia by the Suez Canal, instead of their rounding

the Peninsula and *vice versâ viâ* Gibraltar. It was thought that Bordeaux and Marseilles would thus become the *entrepôts* of the countries interested in the transit trade with the East, including India and China. The branch railway from Marseilles to Cette was constructed to shorten the distance between the former port and Bordeaux, which it does by twenty-nine miles. This leaves 394, after which there are fifty miles of the Garonne to pass before the sea is reached. It therefore takes thirty hours at the least to send goods from Bordeaux to Marseilles, or the reverse. The length of the inter-marine railway from Passages to Barcelona will be 378 miles, a distance which could be done in $19\frac{1}{2}$ hours at the rate of nineteen miles, the average speed of Spanish goods trains. The cost of carriage to and from Marseilles and Bordeaux averages at twenty francs per ton; consequently, as the Spanish line is shorter, its traffic could be carried on at a lower rate. It is an interesting fact, which should not be lost sight of, that in case the construction of a direct line from Passages to Pampeluna be deferred—and procrastination seems an inherent weakness in Spanish projects—an inter-marine railway already exists, as has been shown. There is little doubt, however, that a railway from Passages to Pampeluna will eventually be constructed.

No formal survey has yet been made of this line, but a preliminary examination of the country through which it would pass, including the chief points of Izarzun, Goisueta, and the Valley of Oyarzun, permits a fair judgment to be formed of the expense and difficulties of the undertaking, and there is no doubt that it could be executed at a moderate outlay and in a short time, the distance, as already said, being only forty-two miles.

When the works for the improvement of the harbour of Passages are completed, Guipúzcoa, that favoured corner of the Peninsula, fortunate in the enterprise and patriotism of its inhabitants and the right of governing itself, will possess the best port on the north coast of Spain.

DENMARK NEW SIGNAL STATION.—Our Special Correspondent at Copenhagen writes that a new signal station will be erected at the Hirshals Lighthouse, on the N.W. coast Jutland, 24 miles W. by N. from the Scaw. Ships passing the Scaw in the night will be able to be reported by the *International Code* at Hirshals.

D A R - E L - B A I D A .

(FROM OUR OWN CORRESPONDENT.)

Dar-El-Baida, 8th March, 1872.

ON the western coast of Morocco there are no safe ports or harbours ; all are roadsteads, strictly speaking, and that of Dar-El-Baida, or Casablanca, forms no exception. The shore is flat, and the bay, to call it so, is both wide and open, inviting as it were, the heavy swells that constantly roll in from the west, north-west, and north. The anchorage is good at about two miles from the shore (winter anchorage, in summer somewhat closer), where there is fifteen to seventeen fathoms water. Immediately before the town and on either side there are reefs extending nearly a quarter of a mile from the shore, over which the surf is constantly breaking. Between the anchorage ground and the shore a good bottom is also to be found, in seven or eight fathoms water: but in consequence of a strong current which sets in from the westward, and the uncertainty of the weather in the winter season, by which this current is more or less influenced, shipmasters prudently anchor beyond its action. Were a vessel to anchor within its reach, and the wind to veer to any of the points indicated and she parted her moorings, as is not uncommonly the case, she would be inevitably lost. For with these winds she would never be able to tack and clear the land off Fedala Point. The landing-place is a narrow entrance with a sandy bottom about forty yards wide, with reefs on either side, over which the surf is to be seen constantly breaking almost in all weather. In making for this entrance the shore boats, long before they approach, steer to windward, and afterwards shape their course for the inlet, aided by the current. If it blows at all hard from the west or north-west, however, all communication between the shore and the shipping is cut off, for the lines of breakers at each extremity of the inlet unite and reach across, and throw up a surf which no boat can resist. The force of this current, though known to ship masters who frequent this coast, may not be generally known. The exportation of grain from this Empire has brought many vessels on this coast, and on the 15th February, in a heavy sea, with wind at W., James Hill, master of the British schooner *Cherub*, of Montrose, with two hands, Anthony Beatie and William Hodgson, imprudently left his vessel to come on shore, bringing off in the same boat Robert Scott, master of

the British schooner *Convid*, of Peterhead, and one hand, William Reid, and also James Watt, master of the schooner *Deveron*, of Banff, which vessels were in the bay with others. Regardless or ignorant of the influence of this current, they steered in a direct line for the inlet, and when midway, in endeavouring to alter their course and get their boat's head to windward, they were struck and capsized by a heavy sea. Four disappeared immediately, two clung to the capsized boat, which being in the influence of the current was carried far to the eastward, tumbling and rolling with the unfortunate men who clung to it. A boat was immediately put off from the shore to their rescue, but from the cause before mentioned, it was not able to make way through the surf. A swimmer was sent off with lines to fasten the boat, and by these means drag her out of the influence of the current, but he was beaten back by the surf, and ere another boat could be brought to that spot on men's shoulders to be launched, the last two disappeared. The empty boat was beached upwards of a mile from the town ten days after the said occurrence. At different intervals five of the bodies were washed ashore, namely, those of the three masters and two seamen. They were duly buried in a Protestant cemetery here, which was consecrated by the Bishop of Gibraltar the year before. The sixth body, that of William Reid, has not as yet appeared.

CORRESPONDENCE.

TRIBUNALS OF COMMERCE.

We have received the following important communication on the subject of our leader in the March number:—

Paris, 27 Février, 1872.

MON CHER MONSIEUR,

Vous me demandez mon opinion sur l'institution des tribunaux de commerce.

La question est grande et complexe. Sa solution peut dépendre de beaucoup d'éléments, les uns principaux, les autres secondaires, qui tous exercent une influence relative sur le problème. C'est assez vous dire que ce grave sujet exigerait une longue étude et des développements qui dépasseraient le cadre d'une lettre. Je me bornerai donc à vous indiquer ici la pensée que m'inspire depuis longtemps le fonctionnement des tribunaux de commerce, tel qu'il existe dans notre pays.

Pour moi, cette pensée se résume ainsi ; l'établissement des tribunaux de commerce est trop ancien chez nous pour qu'il soit possible de les supprimer ; mais s'ils n'existaient pas il faudrait se garder de les créer tels qu'ils sont. L'institution des tribunaux de commerce a été, dans le principe, l'expression d'une idée vraie en elle-même : c'est que l'esprit des affaires commerciales diffère profondément de celui des affaires civiles. On a compris que la solution des premières exigeait plus de rapidité, plus de souplesse et une part plus large aux exigences mobiles de la pratique du négoce. De là est venue cette idée séduisante de faire juger le commerçant par ses pairs. Il n'y avait à cela nul inconvénient dans le principe, parceque les affaires commerciales étaient encore de peu d'importance et pour ainsi dire locales. Mais le mal a été de maintenir la même règle lorsque le commerce a pris chaque jour une importance croissante et soulevé des difficultés légales dont la connaissance exige de profondes études. C'est une chose au moins surprenante de voir des négociants investis, sans aucune étude préparatoire et uniquement parce qu'ils sont des commerçants honorables, du droit de décider les questions les plus ardues et les plus graves de la jurisprudence commerciale. Sans doute nous rencontrons dans le nombre et particulièrement dans les grandes villes, des hommes heureusement doués qui se font vite à ce travail et qui s'assimilent avec une facilité prodigieuse les connaissances qui leur sont nécessaires. Mais ces hommes vraiment supérieurs ne sont pas la majorité, et l'on aurait tort de juger par eux l'institution tout entière ; ce qui est vrai, c'est qu'on ne sait bien dans ce monde que ce qu'on a appris et que les suffrages de la foule ne donnent pas la science. Vous voyez par là que je critique moins l'institution d'une juridiction spéciale pour le commerce que le mode de recrutement suivi dans notre pays pour les magistrats commerciaux. Mon opinion est, en effet, qu'il y aurait avantage pour le commerce à avoir des tribunaux spéciaux qui connaîtraient à fond ses besoins, ses usages, et ses conditions d'existence ; mais en même temps je voudrais que ces tribunaux fussent remplis par des magistrats ordinaires, passant leur vie dans l'étude du droit commercial et des affaires du commerce, y consacrant leurs méditations et apportant tous leurs soins au maintien d'une jurisprudence fixe et bien co-ordonnée. Ces magistrats, sans être eux-mêmes commerçants, ne tarderaient pas à connaître tous les secrets du négoce et ils y joindraient la parfaite connaissance du droit commercial, ce qui réaliserait l'alliance féconde de la théorie et de la pratique.

Voilà, mon cher monsieur, la combinaison qui me paraîtrait la plus désirable pour les intérêts commerciaux. Elle tient le milieu, comme vous le voyez, entre la juridiction purement civile et la juridiction

purement commerciale telle que nous la connaissons en France. Elle réunirait les avantages de l'une et de l'autre, sans avoir leurs inconvénients. Mais comme toutes les solutions moyennes elle a contr'elle les esprits absolus et, chez nous en particulier, l'empire de l'habitude et de préjugés. Je ne la considère pas moins comme la meilleure.

Votre bien dévoué,

E. DUFOUR.

To J. A. W. H., Esq.

THE LONDON SHIPPING OFFICE.

To the Editor of the Nautical Magazine.

DEAR SIR,

As a subscriber to the *Nautical Magazine* from its first appearance in 1832, and having occasionally contributed in a small way to the nautical and geographical information in the early years of its existence, I have naturally felt some interest in the publication, and hailed with much pleasure the appearance of the number for this month, enlarged, improved, and rendered more useful, as it undoubtedly is. But to use a familiar phrase, I was taken all aback on suddenly running foul of the following sentence: "Many of our readers know to their cost that it is not long ago that the Hammett Street Shipping Office was literally a crimping office." (Crimping may be taken to mean one who deceives sailors in any way to get them into his power.) Now, knowing something about all the irregularities which occurred at the Hammett Street Shipping Office, I most decidedly demur to this assertion, and believe I state the truth in saying that not one of the readers of the *Nautical*, or anyone else, has ever found to his cost that the Hammett Street Shipping Office was literally a crimping office. Irregularities there were amongst the subordinates, which were greatly induced and perpetuated by the decidedly expressed wish of the "Board of Trade" to retain a superintendent in his position when he had become totally unfit for attention to duty, through infirmity. But I think the writer of the sentence will, on reflection, agree with me in considering that it is an uncalled for exaggeration to say that the Hammett Street Shipping Office was at any time literally a crimping office. The writer proceeds to say that he has *now* reason to believe that the Marine Board have really sweetened it, the fact being that no alteration of any kind in the management of the office has taken place for the last eighteen months. It certainly looks as though the writer had stept out of his way to have a fling at the London Local Marine Board, publishing this assertion so glaringly to the world.

All things considered, it might perhaps have been as well in the breach as the observance.

I am, Sir, your obedient servant,

ROBT. L. HUNTER.

[We are glad to find that the Deputy-Chairman of the London Local Marine Board so kindly appreciates our endeavours to make the *Nautical* useful; and we trust that he may long be spared to send his valuable contributions to our columns. We much regret to have wounded his feelings. It is, however, a pity to take a single sentence out of a paragraph and feel aggrieved at it ; especially when, as in the present case, the paragraph taken as a whole, was intended to be, and is, a tribute to the reforming energy of the Local Board.]

SIDE LIGHTS.

E. W. M. (Southampton) suggests that the screens are often not deep enough, and that many collisions may possibly occur through the side lights showing over the tops of the screens. There may be something in this in some cases, but on speaking to several of the Government inspectors they inform us that as a rule the screens do reach nearly to the top of the lamps, that is to say, are about four inches higher than the glass.

SUMNER'S METHOD.

To the Editor of the Nautical Magazine.

SIR,—In looking over the back numbers of the *Nautical Magazine*, it does not appear to me that the writers therein on Sumner's method have attached sufficient importance to the simple method of finding the change in hour angle, and consequently the change in longitude due to a change or error of a mile in latitude. The rule and an example are given in Raper, § 615 ; therefore it is not necessary for me to explain the method here. The labour of taking out the parts for seconds when the logs are taken out, and making the calculation, is very small. I have used it habitually at sea for a number of years, and found it of great practical value, as follows :—

First. By working the morning chronometer-sight with the D.R. latitude, and calculating the change in longitude due to a change of one

mile in latitude, the true longitude by chronometer is known directly the true latitude is obtained by meridian alt. or otherwise, without the trouble of working the chronometer over again when the D.R. latitude is found to be in error.

Secondly. By plotting two positions on the chart, say, with ten miles difference of latitude, and the difference of longitude due to that change of latitude, and joining them by a straight line, the line of bearing described by Raper (§ 1009-1011) is obtained.

Thirdly. As the line thus plotted is at right angles to the sun's true bearing (Raper, §1012), if the compass bearing of the sun be taken at the same time as the altitude, the error of the compass may be obtained without any further calculation.

Fourthly. By taking two altitudes of the same body, or different bodies, and plotting the two lines, the position of the ship is determined by Sumner's method (Raper, § 1013).

The method is adapted to any other system of logs. For instance, Riddle gives the parts for 100 seconds. It will be found convenient to calculate the change in hour angle due to 200 seconds' change in latitude, multiply the result by three, and reject the last figure for the change due to one mile in latitude.

Yours obediently,

WM. MAYES, R.N.

ON A NEW METHOD OF DETERMINING THE MOST FAVOURABLE MOMENT TO IGNITE A TORPEDO.

The following communication has been forwarded to us for publication by Dr. P. J. Kaiser, of Leiden :—

Mr. F. A. Abel, in his treatise* "On some Applications of Electricity to Naval and Military Purposes," explains the advantages of firing torpedoes by electricity, but he shows conclusively how difficult it is to determine the exact moment when they ought to be fired.

Since the time on which Mr. Abel explained himself about this question, no great progress has been made in these respects, and the obstacles so fully specified by Mr. Abel exist still undiminished, especially when great and tidal waters must be defended by means of torpedoes. The iron ship of war, also the composite ship, possess a force—namely, *magnetism*, of which they can never be deprived. This force I use to furnish to the station on shore a signal which indicates to an operator

* Royal Institution of Great Britain. Weekly evening meeting, Friday, March 12, 1869.

the particular torpedo to be exploded at the right moment. It shows that a part of the vessel has come in the circle of destruction of the named torpedo. The apparatus designed for that purpose is simply composed and concealed in the torpedo ; it only wants to be let down by the aid of chains at the place where the water needs to be defended, and no contact or collision with the vessel is wanted, while the magnetism is a force that by no interjacent matter can be prevented from exercising its influence.

In the year 1867, I had already made the Government of the Netherlands acquainted with this idea. Shortly afterwards I projected and constructed the apparatus. The experiments which the Government of the Netherlands has ordered have proved my idea to be quite practicable, when the apparatus is constructed according to my prescriptions. After having experimented with my apparatus, first on a small and afterwards on a larger scale, with iron ships (monitors) in a water of nineteen feet deep, I can now declare that the apparatus accommodated to the wants of the service, has hitherto in every respect satisfied the expectation.

The idea itself, and also many of the experiments made with the apparatus, have already been published in the "Netherlands Journal of the Navy." The performance of the idea, however, has remained a secret. Presently I am fully disposed to make Governments or particular persons of foreign States acquainted, on certain conditions, with the arrangement of the apparatus, and also to show the way wherein the apparatus must be used. For the rest I am inclined to give complete explanations about the experiments which have been made in the Netherlands according to the orders of Government.

WOOSUNG, CHINA.

We publish, for the information of our readers the following extract from a voluminous report and record of observations respecting the meteorology of Woosung, kindly furnished to us by Captain Toynbee, F.R.S.:—"The meteorological tables for the past five years will show that, on the whole, A.D. 1871 compares favourably with the preceding year (1870), and that 1869 was more than ordinarily wet and boisterous. To wit, during the last-named year we had 126 days on which rain fell, while in 1867 there were only 79; in 1868, 117; in 1870, 81; and in 1871 but 62—say 47 rainy days in 1869 in excess of 1867, and 64 above 1871; while in the aggregate of hours on which rain fell there is a similar disparity, as thus: in 1867 we had 26 days 21 hours; in 1868, 39 days 16 hours; in 1870, 28 days 1 hour; in

1871, 18 days 19 hours; while in 1869 there were 40 days 18 hours. As to gales, they came to 80 in 1867; 88 in 1868; 15 in 1870; 18 in 1871; and 84 in 1869; and the strong breezes—but little less in force than gales—during that year amount in number far above the other four years. Typhoons are of rare occurrence, happily—one a year on the average, and then the centres are nearly always found to have passed some way to the southward and eastward of the Yang-tsze Cape; the typhoon of July 1864 being the only exception for several years. Further down the coast, and in the China Sea, they are of a much longer duration, too, than those that generally pass over this locality. As to depression of mercury in the barometer tube, this is not always indication of rough weather; though the minimum of 29° 59' in August, 1867; 29° 34' in July, 1868 (the hardest blow since 1864); and 29° 46' in September, 1869, were in every case concurrent with the three hardest blows during the three years. On the other hand, there was a fluctuation of 86° in November, 1867; 88° in October, 1868; 29° in October, 1869; 56° in December, 1870; and 59° in December, 1871; the weather experienced during these months being the most genial of their respective years; and the highest rise, viz., 80° 78' (very unusual) in 1871, was in December, a strong N.W. wind blowing for seven consecutive days. The minimum temperature—19° of Fahrenheit—in December, 1868 and 1871, was 7° below what it fell to in 1867, 2° in 1869, and 8° in 1870. The maximum of 99° in 1871 was 1° above the preceding four years, 98° being identical with what we had in the month of July in 1867, 1868, 1869, and 1870. Average time of high water at full and change is thirty minutes past noon, or midnight, the difference of time of high water at Shanghai and at Woosung being in ordinary springs from thirty-five to forty minutes. Highest springs are in August, September, and October; the lowest in December, January, and February; average rise in highest springs from 11·06 inches to 18 feet.—CHAS. DEIGHTON-BRAYSHER, now Harbour-master at Shanghai."

STOPPING HOLES IN SHIPS' BOTTOMS.

We have received a communication from Captain Robert Watson, of the West India and Pacific line of steamers on this subject. The gallant captain says he stopped a serious leak on board the s.s. *Levantine* in 1852, caused by the breaking of the w.c. pipe at gland, considerably under water; and in 1854 he stopped a leak in the bottom of the *Waterwitch* when in Gibraltar Bay. And, in 1858, he used the same means

on board the s.s. *Orontes*, in Beyrout Roads. Captain Watson gives the details of the plan he adopted, and it is really in all its essential points, that now patented by Mr. McCool. And the Captain then continues as follows:—"The plates of iron ships are more quickly destroyed immediately *under pumps* and *sounding pipes* than is commonly credited. In the first place, by the very frequent tapping of the sounding rod on the same spot; and, secondly, by the coperized draining from the brass pump chambers. These dangers are almost entirely removed by fitting an additional plate immediately under these parts. I am a strong advocate to the publicity of anything which may tend to the safety of life or property. But to patent a common means used, and thereby to prevent its use, seems to me, not only an injustice, but a hindrance to the future application of what has heretofore been well known and practiced by those of the Mercantile Marine of this port." (Liverpool).

OUR OFFICIAL LOG.

GENERAL.

RULE OF THE ROAD AT SEA.—The North German Empire, who have for long adopted the British (International) Rule of the Road, have now formally adopted our explanation of Articles 11 and 18, and have embodied that explanation in the text of their rules. We believe that the North German Government have been pressed by the advocates of Mr. Lacon's system (a system, by the way, which has never found much favour in this country) to adopt new rules, but, as we expected, the experience and judgment of the Emperor's advisers have wisely thrown over all ideas of change, and have given in a fresh adherence to the established rules. The text of the German explanatory rule is as follows:—*Article 18a.* The preceding Articles 11 and 18 are only applicable if two ships are approaching each other end on or nearly end on, so that there is danger of collision, but not if two ships, both keeping their course, can pass free of each other. The said two articles are, therefore, only applicable if two ships are steering directly or almost directly on each other: in other words, if in the day time each of the two ships sees the masts of the other in a straight or almost straight line with her own, and if at night each of the two ships is in such a position as to perceive both the side lights of the other. On the other hand the said two articles are not applicable, if in the day time

one ship sees that her course is crossed before the bow of the other ship, or if at night the red light of one ship is over against the red light of the other, or the green light of the one over against the green light of the other, or if a red light without a green one, or a green light without a red one, is in sight ahead, or if both coloured side lights are in sight elsewhere than ahead.

CHANGE OF NAME OF SHIP.—The following will be useful to our readers. On application for change of name, the Board of Trade reply as follows, if they do not object to the proposed change, viz. :—“ Sir,— I am directed by the Board of Trade to acknowledge receipt of your application to change the name of the ship A. B., of C. D., and to re-register her by the name of E. F., of G. H. In reply, I am to request that you will cause your intention to be advertised, in the form herewith marked (A), in the *London Gazette*, in the *Shipping and Mercantile Gazette*, in *Lloyd's List*, and in one daily paper circulating in the port in which the ship, if British, is registered, or in which, if not previously British, she is about to be registered ;—in the cases of the three last-named papers, the advertisements to be repeated twice a week for two weeks. If at the expiration of fifteen days from the date upon which the last of the advertisements appears, no objection has been received by the Board of Trade, the Board will take your application into consideration. The form B should be filled in and returned to this department as soon as the requisite advertisements have appeared. I am, &c.” The form of advertisement referred to as from A is as follows :—“ Official Notice.—Proposal to Change a Ship's Name.—I, X. Y. Z., of Z. Y. X., hereby give notice, that in consequence of (here give reasons for application), it is my intention to apply to the Board of Trade, under section 6 of the Merchant Shipping Act, 1871, in respect of my ship (name of ship), of (port of registry), official number 0000, of gross tonnage 0000 tons, of register tonnage 0000 tons, heretofore owned by (names of owners), of (address of owners), for permission to change her name to E. F., to be registered under the said new name at the port of G. H., as owned by X. Y. Z., of Z. Y. X. Any objections to the proposed change of name must be sent to the Assistant Secretary, Marine Department, Board of Trade, within fifteen days from the appearance of this advertisement.” The following is the form referred to as from B :—Present name of ship, port of registry, official No., tonnage—register, gross, late owners, proposed name of ship, present owners, reasons for requiring change of name, dates of advertisements in *London Gazette*, *Lloyd's List*, *Shipping and Mercantile Gazette*, a local paper. (Copies of the papers with the advertisements marked should be annexed hereto.) “ I hereby apply to the Board of Trade under Section 6 of the Merchant

Shipping Act, 1871, for permission to change the name of the ship above described, and I declare the above to be true. (Applicant.)”

ROYAL NAVAL RESERVE.—The actual strength of the 1st Class Reserve is now 12,865 men, of whom 5,794 are away at sea, leaving about 6,000 available men at home. Of the whole force, 12,700 have undergone drill, and the average age is 30 per man.

THE NAVY ESTIMATES.—The sum proposed for the year is £9,508,149, or £281,807 less than the last vote. In many items there is an increase. The votes provide for 61,000 men—the same number as last year—but their wages will be £19,191 less, and their victuals and clothing £24,067 more. The estimate for the Admiralty Office is increased by £10,268. The coastguard service is reduced by £18,880. The scientific branch is increased by £5,688. The dockyard expenditure is increased by £11,565. £6,088 extra is to be paid to artificers at home, and £8,867 abroad. The medical establishment is increased by £2,020. The estimate for naval stores shows an increase of £90,545, the total sum being £928,510. Timber, &c., this year is to cost £148,069, or more than twice the value of last year; £21,709 less of metal, but the stores of hemp, paint, materials, and miscellaneous articles will be largely increased. Steam machinery £271,822; £106,782 to complete engines ordered, and £164,540 will be asked on account of £460,600 worth of engines to be ordered this year. The total amount for ships (building by contract) is £127,994, against £368,476 last year. £47,294 for the iron armoured ships ordered, and this year new contracts will be given to the amount of £106,345, on account of which £80,700 will be voted. £9,500 for torpedoes is wholly new. The vote for experiments is increased from £5,000 to £8,000. New works are reduced by £64,908; £168,711 is asked for Chatham. In the miscellaneous services there is a decrease of £14,820. £2,000 is to be given to Mr. Archibald Smith, Q.C., in connection with ascertaining and applying the deviation of the compass. £5,000 is asked towards the cost of a graving dock at Table Bay. The supplementary naval estimates for the current year amount to £102,000. The sum of £30,000 is required to meet the charge for improved arrangements in regard to the settlements of the pay of seamen. £70,000 is required for contractors for Portsmouth dockyard; £2,000 to Captain Scott, R.N., for payment of the expenses in prosecuting and perfecting certain gunnery inventions.

“**QUEEN OF THE THAMES.**”—The miscarriage of the order of an official inquiry into the circumstances of the stranding and wreck of this magnificent ship, produced a keen sense of disappointment throughout the maritime circles of the kingdom. That order was made with a perfect

knowledge and a due legal appreciation of the character and effect of the *quasi* official inquiry, which had been previously held at Bredastorp. On principle, it was felt that an investigation not directed by the Colonial Authorities at the Cape of Good Hope, but gone into at the instance of the master and his officers, whose conduct must necessarily have been a main subject of inquiry, ought not to have been upheld, and the reasonableness and propriety of this feeling appeared to be borne out both by the letter and spirit of the Colonial Acts relating to inquiries into casualties at sea. The usual careful preparations were made to render the inquiry complete and scrutinizing. Several passengers of the highest position and character were ready and anxious to give evidence. An unusually crowded gathering in the Greenwich police-court testified to the interest felt in the revelations expected to be made, but a baseless technical objection won a temporary triumph. It was contended *in limine*, that an investigation having been previously held in the Colony, resulting in the exculpation of the master and officers, it would be abhorrent to the usages of British law to place their certificates again in jeopardy. An inquiry, which Mr. O'Dowd branded as a sham, (an epithet repeated by the Solicitor-General on his late application to the Court of Queen's Bench for a rule *nisi*) was upheld by the Greenwich magistrates as a bar to further proceedings. The Board of Trade have deemed it due to the maritime interests of the kingdom to subject Mr. Maude's view of Colonial law and administration to the revision of the Court of Queen's Bench. The legal grounds for adopting this course were but superficially glanced at on the application for the rule. It transpired, however, that no judgment of exoneration of masters should be valid, unless approved of by the Governor. In the present case that functionary went farther than *not* approving. We formally and emphatically recorded a minute of disapproval. We shall be surprised if it be not held by the court, when the rule *nisi* comes to be argued next term, that Mr. Maude was wrong in his estimate of the power thus conferred on the Governor, a power equally applicable to the suspension and restoration of the certificate.

THE 'AUSTRIAN NAVY.—The Vienna *Tagespresse* gives the following account of the present state of the Austrian Navy. Including vessels now building, the marine force comprises 48 ships, with a collective tonnage of 98,460, 16,016 horse power, and 484 guns. There are 4 iron-plated casemate vessels, 2 river monitors, 3 screw frigates, 5 screw corvettes, 10 screw gunboats, 7 paddle advice boats, 4 transports, 1 torpedo vessel, 2 yachts, 4 training vessels, 1 barrack ship, 2 practice brigs, 1 floating workshop, 2 transport schooners, and 4 small unarmed steamers. The *personnel* comprises 899 officers on active service, 48

officers on land service, 8 clergymen, 62 surgeons, 62 engineers, 14 theoretical teachers, 5 hydrographic officials, 7 auditors (judicial officers), and 279 warrant officers, altogether 944, besides the sailors and marines, whose number is not given. The *Tagespresse* complains that for some years the partiality for the navy, which was formerly visible among the educated classes, has entirely disappeared, and that old officers are leaving the service to an alarming extent. Only 22 per cent. of the *personnel* of 1854 has remained on service, the remainder being all new men.

BELGIUM AND ENGLAND.—We gather from the reports of the proceedings of the Belgian Parliament that a new steamer is to be constructed to replace the *Belgique*, now employed in the mail service between Belgium and England. A report has been made by M. Van Iseghem, which points to the necessity of the efficiency of the service being secured, which was not done by the *Belgique*, that vessel being often delayed in bad weather. Accordingly, we are enabled to record the fact that a credit has been taken in the Belgian Chamber for 615,000 francs for a new vessel, and the *Belgique* is to be kept as a reserve boat. It appears that the maritime affairs of Belgium are flourishing, if we may judge from the comparative statement annexed to M. Van Iseghem's report, and that gentleman expresses his confident hope that the proposed superior mail service will still further improve the condition of things. We congratulate our ally on this satisfactory progress.

WELLINGTON, NEW ZEALAND.—The reports of the marine department of this colony for the years 1869-70 and 1870-71 are certainly most encouraging; lighthouses are placed where they are found to be of great service, buoys and beacons mark the entrances to the chief harbours, and careful verifications of old surveys have been made of the dangerous waters round about the islands; besides this, the system of examination of masters and mates is in full swing, and other useful practices of the Board of Trade in England are successfully adopted. If things progress in this satisfactory manner for another half century, Lord Macaulay's New Zealander may after all turn up to contemplate the ruins of London, notwithstanding the derisive observations of enlightened Englishmen.

AMERICAN STEAM BOAT ACCIDENTS.—The accidents to STEAM BOATS on United States waters, during the last four years, according to a recent report of the Secretary of the Treasury, were 526 in number. There were 151 accidents by fire, 56 by explosions, 87 by collision, 42 by wreck, and 190 by sinking. Of the accidents by explosion 18 occurred on the Atlantic coast, 25 on waters flowing into the Gulf of Mexico, 9 on the lakes, and 4 on the Pacific coast. The losses in the 526 accidents amounted to property valued at \$13,378,850 and 1,455 lives.

NAVAL SALVAGE MONEY.—Preparations are being made for distribution of the award for services to the Dutch schooner *Thillichicua Amelia*, on the 5th January, 1871, by H.M.S. *Trafalgar*.

EXPORT OF RICE FROM JAPAN.—Leaving the prohibition against the export of rice as it exists, it is intended henceforward when there is a surplus in the country, as circumstances may demand, that some of the rice stored by the Board of Finance shall be sold at the open ports by public tender to Japanese and foreigners for exportation. The date for sending tenders will be notified on each occasion at the open ports. On certain occasions the Government may export on its own account.

LIGHTS CARRIED AT SEA.—NEW YORK.—The United States Supreme Court, in the case of the steamer *Scotia*, has decided that the lights now required to be carried at sea having been adopted by over 30 of the Maritime Powers must be regarded as required by the law of the sea so far as such nations were concerned, and that the Court would take judicial notice of this and enforce the rule like any other rule recognized by the law of nations.

CONSULAR.—The Queen has approved of the following appointments. —For his Majesty the Emperor of Austria : Mr. Emilius Thonemann, as Consul at Melbourne ; and of Mr. Rudolph Kummerer, as Consul at Sydney. For the German Empire : Mr. Wilhelm C. Munderloch, as Consul at Montreal ; of Mr. Friedrich Buck, as Consul at Hobart Town ; and of Mr. Carl Friedrich Otto Nolke, as Consul at Bombay. For his Majesty the King of Portugal and the Algarves : Mr. E. M. Delmege, as Consul in the Island of Ceylon. For his Majesty the King of Italy : Cavaliere Carlo Stefano Festa, as Consul at Singapore, with jurisdiction in the Straits Settlements. For the Republic of Chili : Don Frederic C. Kelly, as Vice-Consul at Dublin. For the French Republic : M. Martial Chevalier, as Consul-General at Quebec. For his Majesty the King of the Belgians : Mr. J. A. Sohr, as Consul at Bombay. For the United States of America : Mr. Thomas T. Prentiss, as Consul at Mahe, Seychelles. For his Majesty the King of Spain : Don Juan Antonio Disdier, as Vice-Consul at Cardiff.

MARITIME LAW.

RUNNING FOUL OF A LIGHT-SHIP.—The 414th section of the Merchant Shipping Act, 1854, enacts that whoever negligently runs foul of any light-ship or buoy, shall incur a penalty not exceeding £50. Under this section the master of the s.s. *Neva*, of Hull, was summoned, at the instance

of the Trinity House of London, for negligently running foul of, and seriously injuring, the Newarp light-ship, on the morning of the 9th of December. The *Neva*, after causing the damage, proceeded on her voyage, without giving her name. The stipendiary magistrate fined the defendant £50 and costs.

DAMAGES FOR LOSS OF A HUSBAND.—THE “CARNATIC.”—EXCHEQUER CHAMBER SITTINGS IN ERROR.—In an action in the Court of Common Pleas, by a widow, to recover compensation for the loss of her husband, occasioned by the wreck of the defendant's ship *Carnatic*, in 1869, the plaintiff charged the owners with negligence. It appeared that the deceased was a passenger by the *Carnatic*, which struck on a reef in the Red Sea, on the 1st September, whilst proceeding on her voyage from Suez to Bombay. The vessel remained fixed on the reef for two days, during which time the master considered it better that the passengers should stay on board. On the 14th the vessel suddenly slipped over the reef, carrying the deceased with her, the surviving passengers and crew being saved by the boats. The judge, before whom the case was tried, directed the jury that if they considered the loss of the ship was attributable to negligence, or that, even if the ship were not lost through negligence, there was a want of care in not sooner landing the passengers in the boats, the plaintiff was entitled to a verdict. The jury found for the plaintiff, and gave a verdict of £3,000 damages. A bill of exceptions was tendered on the part of the owners, on the ground that the judge had misdirected the jury, but the Court of Exchequer Chamber held that the exceptions must be over-ruled, and the verdict for the plaintiff upheld.

FREIGHT. — NON-DELIVERY OF CARGO. — THE “TEUTONIA.” — JUDICIAL COMMITTEE OF THE PRIVY COUNCIL, FEBRUARY 21.—This was an appeal from a decision of the Court of Admiralty. The *Teutonia* was chartered by certain British subjects, who were the consignees under the bill of lading, to convey a cargo of nitrate of soda to a safe English or foreign port between Havre and Hamburgh, both included, according to the bill of lading and charter-party. The master sailed for Dunkirk under orders from the consignees (the plaintiffs), but, on approaching that port, was informed by a pilot that war had broken out between France and Germany. He returned to the Downs and proceeded to Dover, and whilst there the owner forbid him to go to Dunkirk. The agent of the consignees required him to proceed to Dunkirk port, as he had learned from the consul that war had actually been declared; he declined to do so, also to deliver the cargo at Dover without payment of freight. He subsequently delivered up the cargo to the consignees, by order of the Court

of Admiralty, on an understanding to pay the freight if directed, and a question was raised whether it was to be *pro rata* or in full. The consignees then sued the master for damages for non-delivery of cargo at Dunkirk, and the suit was dismissed with costs. Lord Justice Mellish stated that their lordships concurred with him in the opinion that the master of the *Teutonia*, after being credibly informed that war had been declared, was justified in taking proper precaution for the safety of his vessel, and considered that, as he had pursued a proper course, he was entitled to freight *pro rata itineris*. On the whole, their lordships would recommend to her Majesty that the appeal should be dismissed with costs.

ANSWERS TO CORRESPONDENTS.

(From the *Shipping and Mercantile Gazette*, by arrangement with Sir WILLIAM MITCHELL.)

CO-PARTNERSHIP.—The managing owner of a vessel is left in a minority by the majority purchasing one-sixteenth more than half. The majority now wish to have the working and management of the vessel, but the others are not satisfied with such an arrangement. How is the said minority to be protected against future loss, and can the majority be compelled to purchase the other parties' shares?—The majority cannot be compelled to purchase the shares of the dissentient minority. But the latter can compel the majority, if the vessel is sent upon any voyage of which they disapprove, to give bond in the value of the vessel. If, however, the minority wish to be clear of the concern, they can apply to the Court of Admiralty to decree a sale of the ship and apportionment of proceeds.

DELIVERY OF CARGO.—A tradesman asked whether the placing goods on the public pavement, and not on his premises, is a legal and sufficient delivery, when steamers advertise to collect and deliver, and was informed that delivering over a ship's side into lighters, or on waggons, or on dock quays, is a good and sufficient discharge. When merchandise is sent to be warehoused, the carman is not bound to engage hands to hoist the goods up to the floors. A legal and sufficient delivery, therefore, as far as a shipowner is concerned, would consist in placing the goods where they could be taken possession of by the rightful owner.

DISOBEYMENT OF ORDERS.—A master of a coasting vessel having been superseded, the person placed in charge was instructed by the owner to charter her upon her return voyage home. On arriving at London, he

chartered her in a contrary direction, and afterwards fixed her to proceed to a port in France, in ballast, to load for London, but never fulfilled her charter. Can the owner, who has satisfied the claim of the charterer for non-fulfilment, proceed against the person who took charge for his misconduct?—If the person who took charge did so deliberately, and has by his neglect or misconduct placed the owner in the position of having to pay damage, he can be made responsible.—(“*Foster v. Clements*,” “*Rogers v. Kelly*.”)

OFFICIAL METERAGE.—A master who arrived with a cargo of coals at Chichester, where the Corporation have appointed no sworn meter, inquired whether he is bound to accept as a meter any person the merchant may send on board, or whether he can insist upon having a sworn meter from another port?—He was informed that at every port where local dues are collected on coals, there should be a duly licensed meter to superintend the delivery. In nearly every port in the kingdom there are sworn meters or measures. In consequence of the Chichester authorities having failed to license an impartial meter, he is not bound to have his cargo weighed out by a person appointed by the payee of the freight. He should appoint a person, on the part of the ship, to check the scales and baskets, and notice ought to be given to the merchant that the meterage of an interested receiver of cargo will not be taken without the control of a weigher in the interest of the ship-owner; or, on the other hand, that the weighing out by a sworn meter from another port will be accepted on both sides.

PATAGONIA.—The Chilian Government have notified to British ship-masters loading guano on the uninhabited shores of Patagonia, that they do so at the peril of seizure of ship and imprisonment. Do these waste and uninhabited coasts belong to that or any other country, and on what grounds have such orders been issued?—The notification which has appeared in our columns, signed by the Chilian Minister, claims for the Republic of Chili sovereign rights over the Coast and Islands of Patagonia. That Republic has for many years exercised those rights without challenge from other States. This action on the part of the Chilian Government appears to have originated in the desire to protect guano deposits in the neighbourhood of the States of Magellan and Terra del Fuego from interference on the part of foreigners.

POTATO CARGO.—A vessel arrives at a port (after having been detained in a roadstead, through stress of weather, for a few days) with a cargo of potatoes. On the hatches being removed, the potatoes, the merchant says, appear to be a little damaged. He, therefore, does not appear to be inclined to break bulk. Can the merchant not be compelled to break bulk, or has the captain power, after laying all his lay-days, to sell the

cargo for freight? The merchant, having agreed to hold a survey on the cargo, two persons to be appointed, the one by the merchant, the other by the captain, on whom does the cost of this survey fall? and if it be decided that a portion of the cargo is damaged, can the merchant deduct the difference in value from the freight?—Potatoes stowed in bulk give off a vapour, especially in damp weather, and deteriorate, without ventilation. A shipowner, however, if he has taken ordinary care in the stowage and conveyance, and the potatoes have not been injured through any negligence on the part of his servants, cannot be held liable for depreciation in value arising out of natural causes. Serve the merchant with a written notice that the cargo will be landed and sold for freight. If the potatoes have been damaged from perils of the sea, the cost of survey would be divided; but if from natural causes, the charge should be borne by the consignee. The deduction from freight may be recovered by action at law.

SHORT DELIVERY OF CARGO.—A master loaded a cargo of pig iron at Troon, for Runcorn, signing for weight, and turned out 21 cwt. short of the bill of lading quantity, exclusive of 17 cwt. of sand. Is the consignee justified in stopping the value of the iron from the freight on the ground that the bill of lading states, "Freight to be paid on the whole being delivered?"—If the weight of rust, sand, and iron shipped, as per bill of lading weight, was delivered, the owner is not liable for short delivery of iron alone; nor can the value of the alleged deficiency be legally deducted from the freight. It will rest with the master, in the event of an action, to prove that the quantity shipped was delivered.—(See *Shipping and Mercantile Gazette*, Jan. 5, 1871.)

BOARD OF TRADE INQUIRIES AT HOME.

1. *Queen of the Thames*, of London, stranded near the Cape of Good Hope, 18th March, 1871. Inquiry ordered June 2nd, 1871. Mandamus granted by the Court of Queen's Bench. Proceedings still pending.

22. *Frances*, of London, stranded near Dimlington, 12th February. Inquiry ordered 29th February, and held at Greenwich on the 19th, 20th, 21st, 22nd, 26th, and 27th March, before J. H. Patteson, Esq., S.M., with Captains Harris and Hight, N.A. Master exonerated.

23. *Amazon*, of Liverpool, boiler burst and four men killed at Bordeaux, on the 30th January. Inquiry ordered 4th March. Proceedings pending.

25. *McDonnell*, of Sunderland, stranded on Hasboro' Sand, 10th March. Inquiry ordered 22nd March, and held at Sunderland on the 4th and 5th April, before Messrs. Booth and Elwin, J.P., with Captain Hight, and Commander Prowse, R.N., N.A. Vessel lost through default of master, whose certificate was suspended for three calendar months.

26. A whale-boat capsized, and two coastguard men drowned on going out in answer to signals of distress from the *Rival* and *Messenger*. Inquiry ordered 21st March. Proceedings pending.

27. *Defender*, of Sunderland, stranded on the Goodwin Sands, 19th March. Inquiry ordered 27th March, and held at Sunderland on the 6th and 8th April, before G. R. Booth, Esq., J.P., and J. Lindsay, Esq., J.P., with Captain Hight and Commander Prowse, R.N., N.A. Master not to blame for the disaster. Certificate returned.

28. *Defiance*, of Liverpool, stranded on the coast of Natal, October, 1871. Inquiry ordered 27th March, 1872, but subsequently abandoned.

29. *Storm King*, of North Shields, foundered 12 miles S.E. of Flamboro' Head, 8th March. Inquiry ordered 5th April, but subsequently abandoned.

30. *Yatala*, of London, stranded near Boulogne, 28th March. Inquiry ordered 5th April. Proceedings pending.

31. *Teesdale*, of Sunderland, stranded on Shingles bank, Isle of Wight, on the 28th of March. Inquiry ordered 9th April, and held on the 16th and 17th April, at Sunderland, before G. R. Booth and R. Elwin, Esqs., J.P., with Captain Harris, and Commander Prowse, R.N., N.A. Default of master, in rashly attempting to enter a channel so dangerous, in thick weather. Certificate suspended for six months.

32. *St. Oswin*, of Newcastle, stranded at St. Stefano Point, Sea of Marmora, 2nd March. Inquiry ordered 12th April. Proceedings pending.

INQUIRIES ABROAD.

19. *Sussex*, stranded near the Barwon Heads, 31st December, 1871. Inquiry held at Melbourne, before Captain Payne, R.N., and Captains Fullerton and Devlin, and G. A. Stephen, Esq. Master in default, but in consideration of his excellent character, his certificate was suspended for six months only.

20. *Percy Douglas*, stranded on the Krishna Shoal. Inquiry held at Rangoon, before R. C. Evanson, Esq., J.P., and Captain W. E. Smark, R.N., H.M.S. *Nemesis*. Master very much to blame for his

conduct in navigating the vessel. Master and nine men missing. Supposed lost.

21. *Fuh Le*, of London, stranded on Blackwall Island. Inquiry held at Ningpo, before R. Swinhoe, H.B.M. Consul; Lieut. Smith, R.N.; H. Boke, Master Mariner and Harbour Master. Master not blamed. Land obscured by thick fog.

22. *Law Ogilby*, of Swansea, abandoned at sea in lat. 42 N., lon. 13.16 W., 4th December, 1871. Inquiry held at Cape Town before the acting resident magistrate. Ship's papers and officers' certificates being lost, and the statements purely *ex parte*, the Court was precluded from delivering any judgment.

REWARDS.

To Captain Meenke B. Ehrenfried, master of the North German schooner, *Jeanette*, a telescope, for picking up at sea, off Heligoland, the crew of the brig *Harry*, of Sunderland, on 15th March, 1867.

To Captain Juan Bilbao, master of the Spanish barque, *Rio de la Plata*, of Bilbao, a binocular, for having rescued from their sinking vessel, in September last, the crew of the barque *Balaklava*, of London.

To Captain David Strum, master of the brig *Maggie*, of Lunenburg, N.S., a binocular, for having stood by the barque *Thomas Dallatt*, of Kingston, Jamaica, twenty-four hours, and rescuing her crew on 7th March, 1872.

To Mrs. Emma M'Carthy, of Woolwich, the sister of Edward Adams, late of the ship *Sir Harry Parkes*, who lost his life after rescuing the crew of the *Amber Nymph*, a sum of £15. Deceased had been brought up by, and was a source of help to his sister.

DARDANELLES.—The town of the Dardanelles (marked Chanak in the charts) is the most important place, as regards shipping, in the Straits. It is the residence of the Commandant of the Forts, whose duty it is to oblige shipmasters to comply with the various regulations affecting the passage of the Straits. The Central Health Office in the Straits, is at Chanak, as also is the principal British Consular Office. Pilots for the Danube can always be secured at this port, the rate of pay from here to a port in the Danube, is from £15 to £20. Pilots for Constantinople, the Black Sea Marmora, Enos or the Archipelago, can also be found at Chanak. The usual ship's stores and provisions can be obtained here,

also good water from the fountains near the Turkish Hospital situated on the north-east shore of the bay of the town. Shipmasters can telegraph, in English, from Chanak to any part of the world, and they will often find it convenient to post here their letters for England. Chanak is the head-quarters of the different tug-steamers stationed in the Straits. Masters in distress, requiring the assistance of a tug, will, as a general rule, do well before concluding a bargain with a tug-master, to proceed in person to the Vice Consulate at Chanak. Steamers requiring supplies of coals from thirty to forty tons, can obtain them at Chanak. Divers, using the latest diving apparatus are to be found here, capable of effecting temporary repairs to a ships bottom.

REGULATIONS CONCERNING THE PASSAGE OF THE DARDANELLES.—The principal regulations at present (March, 1872) in force regarding the passage of the Straits are as follows:—

Vessels Bound Downwards.—Ships coming from Constantinople may pass through the Straits at any hour of the day or night. The only formality required of them is to send to a Turkish hulk, painted white, (anchored off Lampsaki) their firman, their light-house receipt, and the document showing that they have paid all sanitary dues. No fee has to be paid.

Ships Bound Upwards.—Ships coming from the Mediterranean may not pass through the Straits (between Chanak and Kilit Bahar) from sunset to sunrise. Should they, however, arrive off Chanak at dusk, they are permitted to anchor in the bay of the town, provided that they send a boat to the Health Office on the following morning. Masters should be careful to comply with this proviso lest the privilege be withdrawn. Vessels with *clean bills of health* must exhibit them at one of the following stations in the Straits in order to obtain free pratique: Siddul Bahar, St. Quelmez, Chanak, Gallipoli or Lampsaki. Masters neglecting this regulation, will, on arrival at Constantinople, be fined according to the following table:—

Sailing vessels up to 50 tons register,	Turkish Liras 2,	about	£1 16 5	Stg.
„ from 50 to 200 „	„	5,	„	£4 11 0 „
„ upwards of 200 „	„	10,	„	£9 2 0 „
Steamers an invariable fine of	„	12,	„	£10 18 2 „

The same fines are imposed on vessels, which, coming from one Turkish port and bound to another, have neglected providing themselves with a Turkish bill of health, vessels which have no bill of health whatever, and vessels which have a bill of health provided by any authority other than the sanitary authority of the port of departure. Vessels arriving with *foul bills of health* cannot clear any of the other four stations, but must stop at Chanak, and in time of any epidemic,

whether in Western Europe or in the Levant, shipmasters should make it a rule to call at Chanak, at the Health Office of which they can ascertain, with greater exactitude than at any of the above-mentioned stations, the special sanitary regulations which may be in force.

DARDANELLES SAILING DIRECTIONS.—The buoy on the Dolan Arslan shoal should not be passed too closely, as the bank runs parallel with the coast for a considerable distance, and there is but little water just inside.

The buoys on the edge of the Diana bank serve to mark that dangerous and extensive flat, which has to be approached more closely than heretofore, owing to the new Firman regulations. By keeping just outside the line of the two buoys, and from the S.W. buoy to that of Lampsaki, all danger will be avoided; the last-named buoy passed, the course is open to the firman vessel.

The buoys on the edge of Fisherman's bank, Moussakioi and Towshan points are good guides for sailing vessels to anchor, whilst waiting for wind or weather, and also for tacking, when beating to windward, but care must be taken not to pass inside them, as the water shoals immediately, and patches of 12 to 15 feet are to be found close to the Moussakioi and Towshan buoys. These two buoys are also useful guides to steamers wishing to avoid the strength of the current, and take advantage of the slack water to be found off the Asiatic shore, where at times a current will be setting in their favour. After passing Capo Abydos, by keeping outside the two buoys, all dangers will be cleared up to Peschiera point, which point may be passed at half a mile.

No ship should attempt to pass inside the Nagara spit buoy, as there is but little water, and the current sets on the spit.

The buoy at Kavanlik Liman marks the best anchorage for sailing vessels entering the Dardanelles from the southward, with strong north-easterly wind, or just before sunset. The best holding ground will be found a little west of the buoy, and in a line with the buoy and Coom Kalessi point. Within this line the water shoals suddenly.

Morto bay will be found a convenient anchorage for steam vessels entering the straits just before sunset. After passing the buoy, steer a little to the right of the easternmost aqueduct (there are five), in order to clear the western flat, and anchor in 9 fathoms, about half a mile off shore.

The buoys on the edge of the Yeni-Sher bank will be found useful to steam vessels approaching from the Tenedos channel. From Gadaro islet they may steer direct for the S.W. buoy, and from that to the N.E. buoy. From this last buoy two courses are open, either to sheer over

towards Morto bay, and then proceed along the European shore, keeping about half a mile off, and so avoid the strength of the current, or to keep within the slack water, along the Asiatic shore, where at times a favourable current will be found; should the latter course be adopted, after passing the N.E. buoy, steer for Sowanderch, which appears like a bold headland to the eastward of Morto bay, this course will clear the edge of the bank, which runs almost straight from the buoy to the Castle point; but when the windmills open to the north of the Castle, and the northern minaret of Coom Kalessi village comes on with the south end of the Castle, then Cape Kephez, or Barber's point, may be steered for until abreast the Castle, which may be passed safely in 16 fathoms at half a mile distance. From this a course may be steered, to pass outside the Kavanlik Liman buoy, and then by keeping half a mile from the shore, all dangers will be avoided, up to the Quarantine establishment, to the south-westward of the white cliffs. From this point a course should be shaped to pass well outside the Kephezbournou buoy, after passing which, Rillid Bahr should be steered for.

From Rillid Bahr, the anchorage at Chanak Kalessi can be steered for, care being taken to keep outside the buoys on the edge of the bank off the village.

Sailing vessels working up, must tack short of the line between the two buoys of the Yeni-Sher bank, and when to windward of the N.E. buoy, go about before passing between it and the Coom Kalessi point, as the water shoals immediately.

As a general rule, in clear weather, the banks are distinctly visible by a well-defined line of green water, in between 3 and 4 fathoms.

THE ATLANTIC COAST.—BAR PORTS.

From the Nautical Gazette of New York.

THE following table, compiled partly from the United States Coast Survey reports, shows the depth of water on the bars named:—

APALACHICOLA—Mean low water 13 ft.; high water 14 ft. 1 in.

BEAUFORT—(Old Topsail Inlet)—Mean low water 15 ft.; mean rise and fall of tide 2 ft. 8 in.

BERBICE, British Guiana—Mean low water 6 ft.; rise 9 ft.

BRAZOS SANTIAGO—Low water (Winter months) 8 ft.; (Summer months) 6 feet.

CHARLESTON—Mean low water 11 ft.; high water 16 ft. 1 in.

DARIEN or DOBOY—Mean low water 15 ft. 5 in.; high water 22 ft. 1 in.

- DEMARARA, British Guiana—Mean low water 10 ft.; rise 9 ft.
 FERNANDINA—Mean low water 11 ft.; high water 16 ft. 8 in.
 GALVESTON—Mean low water 12 ft.; high water 13 ft. 1 in.
 HATTERAS INLET—Mean low water 14 ft.; high water 17 ft. 6 in.
 MOBILE—Mean low water 21 ft.; high water 22 ft.
 MINATITLAN, Mexico—Mean low water 12 ft. 6 in.; rise 3 ft.
 MATAMORAS, Mexico—Mean low water on the bar at the mouth of the
 Rio Grande 7 ft.; rise 1 ft.
 MARACAYBO, Gulf of Mexico—Mean low water 11 ft.; rise 2 ft. 6 in.
 NASSAU, N.P.—Mean low water 17 ft. This bar is rocky and is only
 safe for 15 ft.
 NEW YORK—Mean low water 21 ft.; average rise and fall of tide 5 ft.
 PASS A L'OUTRE—Mean low water 12 ft.; high water 13 ft.
 PENSACOLA—Mean low water 22 ft. 5 in.; high water 23 ft. 5 in.
 PORT ROYAL—(South Channel)—Mean low water 19 ft. 5 in.; (South
 East Channel) Mean low water 21 ft.; mean rise and fall
 SAN LUIS PASS—Mean low water 8 ft.; high water 9 ft. 1 in.
 SOUTH-WEST PASS—Mean low water 18 ft.; high water 19 ft.
 ST. ANDREWS INLET—(Main ship channel)—Mean low water 13 ft; high
 water 14 ft.
 ST. AUGUSTINE—Mean low water 7 ft.; high water 11 ft. 2 in.; half
 tide 9 ft.
 ST. GEORGES SOUND—Mean low water 15 ft. 5 in.; high water 17 ft. 1 in.
 ST. MARKS—Mean low water 9 ft.; high water 11 ft. 5 in.
 ST. SIMONS SOUND—Mean low water 15 ft.; high water 21 ft. 8 in.
 TAMPA BAY—Mean low water 19 ft.; high water 20 ft. 4 in.
 TAMPICO, Mexico—Mean low water on the bar 10 ft.; rise 2 ft.
 WILMINGTON—(New Inlet bar)—Mean low water 8 ft.; high water 12 ft.
 5 in. [Captain J. B. LAWTON, Harbour Master, reports the
 following soundings: Western bar 10 ft. 8 in.; on the Rip
 7 ft. 10 in. These soundings are taken at low tide. A rise
 of $4\frac{1}{2}$ ft. would give 12 ft. 4 in. on the Rip and 15 ft. 2 in. on
 the bar.

HYDROGRAPHIC.

JAVA SEA.—SOUTH EAST COAST OF SUMATRA.

The following dangers off the south-east coast of Sumatra, appear on
 a Dutch chart (Java Zee en aangrenzende vaarwaters, blad 1, 1870),
 published by the Hydrographic Department, Batavia, and are inserted in
 the Admiralty charts.

Ocean Mail, marked with 18 feet and 7 and 8 fathoms all round, is situated 11 leagues to the eastward of the Toelang or Tulang river, on the coast of Sumatra, in lat. $4^{\circ} 18' S.$, and long. $106^{\circ} 26' E.$

Comara, a shoal danger, of doubtful existence, with 7 fathoms close to, placed about 9 leagues to the north-west of the North Watcher, and 7 leagues from the coast of Sumatra, in lat. $4^{\circ} 49' 30'' S.$, and long. $106^{\circ} 14' 30'' E.$

Clifton, marked with 18 feet and 24 to 27 feet to seaward, is situated about 9 miles to the eastward of Cape Scopong, or Supong, on the coast of Sumatra, in lat. $4^{\circ} 56' S.$, and long. $106^{\circ} 3' E.$

GULF OF SUEZ.

Extension of the reef to seaward, from Ras Sherateeb, on the eastern coast of the Gulf of Suez (northward of Tur harbour). By Captain G. S. Nares, R.N., of H.M. surveying vessel *Shearwater*, 1872.

A narrow ridge of rocks with from 5 to $3\frac{1}{2}$ fathoms on it, extends $6\frac{1}{2}$ miles from Ras Sherateeb, or about 4 miles seaward from the encircling reef known as the Shab Khoswan. From the western extreme of the shoal water on this rocky ridge, Ras Gharib lighthouse bears S. $\frac{1}{2}$ W., distant 14 miles. The Asses ears, a remarkable rock on the Jehan hills, in one with Jebel Hooswah, the highest hill on the coast range $3\frac{1}{2}$ miles south-east of the Asses ears, and bearing S.E. by E. $\frac{1}{2}$ E., will lead clear of the west end of the shoal ground.

EAST COAST OF FLORIDA.

The following description of a shoal, on the east coast of Florida, has been received from the Coast Survey Office of the United States.

St. Lucie Shoal.—When between Indian river inlet and St. Lucie inlet, the master of the steam-vessel *Bibb*, passed over shoal ground with 17 feet, suddenly deepening to 10 fathoms. The shoal ground appeared to have less than 17 feet on it, but not to extend to the shore. This outer edge of the shoal with 17 feet, lies about half-way between Indian river and St. Lucie inlet, distant nearly 6 miles from the land.

NEWFOUNDLAND.—NORTH-EAST COAST.—FAREWELL-GULL ISLAND TO BACALHAO ISLAND.

(Directions by Staff-Commander J. H. KERR, Admiralty Surveyor, 1871.)

Directions.—From Sir Charles Hamilton's sound, having passed Vesuvius rock, there are no dangers going north as far as Farewell-Gull island; after passing the island keep on a N.E. $\frac{3}{4}$ N. course, avoiding Dog reef on the east side, by keeping the south-west point of Dog-bay islands open west of the north-west islet off them, and Farewell reef on the west by bringing the west end of the Shag islands in line with the Smoker N.N.E., before the entrance to the inner basin of Farewell

harbour shuts in with the north side of the harbour; and when India-garden island is in line with East-garden island, the reef will be passed; a north course then leads past Smoker island, when South-end must be brought in line with Smoker island, which leads clear of all dangers until off Duck island; from this a N.N.W. $\frac{1}{2}$ W. course may be steered for Herring islands, these may be passed on either side, taking care to open the east end of Berry island of Herring head before Tinker island comes in line with Red island, to avoid a rock which lies off the latter; having passed Herring head, proceed to sea by either of the channels between Starve head and Bacalhao island, except the one close to the head between it and Clarks rock: except this rock, which generally shows, there are no dangers.

From Duck island, if going to sea east of Bacalhao island, a vessel should pass between Kiar and Moorham reefs, steering N.E. by N. for Bacalhao islet, and leave that islet to the westward with a berth of a quarter of a mile; a stranger should not pass between Bacalhao islet and Bacalhao island.

Farewell-Gull Island, off Farewell Head, and opposite the north point of the Dog-bay islands, is 100 feet above the sea; conspicuous from the north-east or south-west.

Farewell Harbour, north of Farewell-Gull island, is 4 cables wide by 8 cables deep; anchorage in 8 to 4 fathoms, mud; east winds blow into the bay with a fetch of $2\frac{1}{2}$ miles from South-end point.

Dog Reef, 6 cables north of the Dog-bay islands, is $\frac{1}{2}$ mile long east and west. Indian look-out island, open north of South-end islands, clears it to the north; west point of Dog-bay islands, open west of the north-west islet off them, clears it to the westward.

The West Coast of Change Island has a general N.N.E. trend for 7 miles, is much encumbered by islands. Deep cove, $2\frac{1}{2}$ miles north of South-end point, is one cable wide, and 3 cables deep, with 6 to 3 fathoms, sand; its entrance is immediately within the Smoker, and midway between Wood islands on the north and Water Bears on the south.

The Smoker is a small flat island 20 feet high, 3 miles north of South-end point, and $\frac{3}{4}$ of a mile from the nearest rocks off Wood islands.

The Ragged Islets lie a mile north-east of the Smoker, many sunken rocks round them; the outer one, the Pipe Rock, lies W.S.W. 6 cables from the southern ragged islet, has 2 feet over it; South-end point in line with the Smoker leads west of it.

The Shag Islets cover a space one mile east and west by half a mile wide, with general height of 20 feet, $1\frac{1}{2}$ mile N.N.E. of the Ragged islet.

Shag Rock, with 4 feet, lies W.S.W. 3 cables from Shag islets; South-end point, touching the east side of Smoker island, leads 3 cables west; North-end just open north of the Shag islets leads the same distance north of it.

Farewell Duck Islands, in continuation of the north side of Farewell harbour, form a long ragged promontory, terminating with Farewell reef, 3 cables long, breaking in a moderate sea. The entrance to the shoal arm of Farewell harbour seen open of the north shore of the harbour clears it on the south; the west end of the Shag islets in line with the west end of the Smoker clears it on the east. East-garden island in line with Indian-garden, clears it on the north.

Main Tickle is a convenient harbour with 12 feet in the shoalest part, may be entered from the eastward in any weather; the entrance is difficult unless the houses on its shore are seen. Tobacco island and two or three of the islands within it being dome-shaped, and 50 to 70 feet high, may help to distinguish it.

A rock with 2 fathoms lies east one cable off Ruth island; in light winds with a heavy sea it is better to pass in south of Ruth island to avoid the danger of being thrown on to this rock. Approaching from the eastward care must be taken to avoid the dangers round Black islet. The passage between Tobacco and Ruth islands is free of dangers, and after passing between the two rocky islets on the north, and Ruth island on the south, bring the points of the tickle just closed in to bear W. $\frac{1}{2}$ N., to avoid the White ground on the north and Skinners rock on the south, and when the last tickle on the north is open, or Skinners cove bears south, the vessel will be past both these dangers, and may open the points of the tickle, and anchor in 6 to 8 fathoms, mud.

Just within Diamond island, the western point of Main tickle, a reef extends half a cable off shore; and at 2 cables W. by N. from the north point of entrance is a rock with 6 feet. Approaching this entrance from the northward, after rounding North-end, keep Change island lookout open of the Shag islets off North Change island S. $\frac{3}{4}$ E., to avoid a rock which lies to the north-west of this entrance, and when the Main tickle is open bearing east, steer in for it; if coming from the south, pass between the Ragged and Shag islands, being careful to avoid the Pipe and Shag rocks.

Beaver Head from Farewell-Duck islands the coast trends west for 6 miles to Beaver cove; this coast should not be approached by a stranger.

East-Garden Island lies north 4 cables from Farewell-Duck islands.

Garden Rock, with 6 feet, lies N.E. by E. $\frac{1}{2}$ mile from East-Garden island. Farewell-Gull island seen over the west end of the east Fare-

well-Duck island clears it on the east; Beaver head open north of Indian-garden, clears it on the north.

Indian Garden Island, small, rocky, and 49 feet high, lies west one mile from East-garden island; a reef extends 2 cables north of it.

Little Beaver Cove lies in the bottom of the bay between Indian-garden island and Beaver head; it is useless as an anchorage.

Beaver Cove is west of Beaver head; it lies east and west, and is divided into two arms, by a low rocky islet: the western one is 2 cables wide and 4 cables deep, with good anchorage in 8 to 6 fathoms, mud.

Curran's Green Field, a small, low, grassy island, 2 miles north of Beaver cove; west of this island is fair anchorage in 8 fathoms; a shoal extends south-west from the island for nearly a cable.

Dildo Run, to the eastward of Curran's-Green-Field, is an intricate channel south of New-world island; there is at least 12 feet in this run, at low water, but it has not been surveyed; good pilots may be obtained on the outer coast between Tilton harbour on Fogo island and Change island harbour.

Nine-Pin Arm, immediately east of Curran's-Green-Field, is full of rocks.

Dram Island, small, 80 feet high, lies about 3 miles, east of Curran's-Green-Field; from it shoal patches extend the whole distance to the Shag islets.

Milliners Arm, $\frac{3}{4}$ of a mile north of Dram island, does not afford any convenient anchorage.

Lobster Islet, east of Milliners arm, is small, low and foul all round for nearly a cable.

Jack Island is $\frac{3}{4}$ of a mile within Duck island, its eastern and highest peak is 285 feet high; to the eastward extend the Grassy islets, which are low.

Grassy Rock, lying east $2\frac{1}{2}$ cables from east end of Grassy islets, has 8 fathoms over it; the first deep saddle in Bacalhao open of Duck island clears it to the eastward; north point of Jack island open south of the Grassy islands clears it the southward.

A Patch of 8 fathoms lies S. $\frac{1}{2}$ E. easterly a mile from the summit of Jack Island, and $2\frac{1}{2}$ miles N.E. by E. $\frac{1}{2}$ E. from Dram island; it breaks in a heavy sea.

Inner 5 Fathoms lies with the eastern summit of Duck island in line with the east point of the Grassy islands, N. $\frac{1}{2}$ E. easterly, and Dram islet S.W. by W. $\frac{1}{2}$ W. 3 miles. *Outer 5 fathoms* lies with the north tickle of Change islands in line with the west side of Mile islet, E. by N. $\frac{3}{4}$ N., and the east point of Duck island N. $\frac{1}{4}$ E., $1\frac{1}{2}$ miles; these last two patches break occasionally in a heavy sea, and should be avoided by

keeping Dram islet a point on either side of S.W. by W. $\frac{1}{2}$ W.; or by having South end point in line with the west side of the Smoker.

Herring Head, rising 264 feet above the sea, is 1.6 mile N.N.W. of Duck island; the Herring islands, lying two cables off the head, are small, about 20 feet high, and may be passed on either side, being steep all round. Between Herring head and Duck island are Cobb's, Little Cobb's, and Pike's arms; the latter two arms are encumbered with rocks, and a heavy sea rolls in.

Cobb's Arm runs in 3 miles, with a breadth of 4 cables, where there is an indifferent summer anchorage in 13 fathoms, a swell rolls in after gales from seawards; limestone can be obtained on the south side of the anchorage.

Entering Cobb's Arm, give Duck island a berth of $1\frac{1}{2}$ cable; and Red islet, off Herring head, a berth of the same distance; and in going up, keep the east end of Bacalhao island open east of Red island, until up to Tinker island, 60 feet high; from this up, there are no dangers on the north shore; those on the south shore may be avoided by having the North Grassy island open north of the islands off Jack island. A rock, with $1\frac{1}{2}$ feet over it, lies nearly in the centre of the arm, a quarter of a mile from the narrow entrance of the shoal arm; North Grassy island open north of the islands off Jack island, passes north of it, and a vessel may anchor north of this line. Small vessels drawing 11 feet may enter the shoal arm, by keeping close to the north point of entrance; when within the point, round up under the north shore, and anchor in smooth water.

Bacalhao Island, 2 miles long, east and west, lies $2\frac{3}{4}$ miles north of Duck island; its highest part is 324 feet.

Berry Island, rocky, barren, and 188 feet high; lies 7 cables west of Bacalhao island, with deep water between.

Starve Head, a steep cliff, 239 feet high, separated from Berry island by a channel 6 cables wide, in the middle of which is Clarke's rock, small, and covered at high water; between the rock and Berry island is a clear channel.

Starve Harbour, immediately south of Starve head, entrance about 30 yards wide, with 4 fathoms in it; it opens out to a deep water basin 2 cables wide by half a mile long; a reef on the north shore makes it necessary to round close by the island forming the south head.

Goldson Arm.—Herring Neck, between Starve and Herring heads, peninsula, is the inhabited portion of the entrance to Goldson arm: from off the western extreme of the peninsula a reef extends $1\frac{1}{2}$ cables; to clear it, keep the south side of Bacalhao island in line with the north of Goose islands, and when Starve head is in line with the point south of it the vessel will be within the reef, and may proceed up the arm, keeping on the north shore.

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MONTHLY ABSTRACT OF NAUTICAL NOTICES.

No.	PLACE.	SUBJECT.
93	AUSTRALIA—Queensland—Port Curtis—Oyster Rock	Establishment of a Light.
94	ENGLAND—South Coast—Beast Point	Establishment of a Signal Station.
95	DARDANELLES STRAIT	Bouysge.
96	UNITED STATES—Alabama—Mobile Harbour	Establishment of a Light.
97	TORRES STRAIT—Great North—East Channel	Discovery of a Rock
98	AUSTRALIA—Port Phillip—Port Arlington	Establishment of a Light.
99	ENGLAND—East Coast—Lowestoft	Closing of Corton Gateway.
100	NEW ZEALAND—North Island—Auckland Harbour—Bean Rocks	Establishment of a Light.

NAUTICAL NOTICES.

93.—AUSTRALIA.—*Queensland.*—*Port Curtis.*—*Oyster Rock.*—A light reflected from the shore is exhibited from a red beacon 21 feet high, on the rock. The light appears as a *fixed white* light visible from S.W. by W. $\frac{1}{2}$ W., by west, to N.W. by N., and almost continuous from N. by E. to E. by N. $\frac{1}{2}$ N.; it is 18 feet above the water, and should be seen 4 miles. N.B.—When within a mile of the rock, the eye must be raised to the level of the light to obtain its full power. The light kept open, bearing S.W. by W. $\frac{1}{2}$ W., clears the rocks and buoy off Settlement point, and when in one with Gatcombe head light bearing N. by E. clears the Junction buoy.

Directions.—To enter the port, steer W.S.W., as formerly, for the red light on Gatcombe head, until the north-east shore of Facing island is shut out by East point. Then alter course, and steer with the Oyster rock light about a point on the starboard bow, and pass within a cable of the rock.

94.—ENGLAND.—*South Coast.*—*Beast Point.*—A signal station-house, 30 feet high, and signal staff, has been established on Beast point, about three-quarters of a mile east of Lizard lighthouses, with which shipping can communicate by signal and forward advices. The Post Office Department has signified its intention to connect this station with Falmouth by a telegraphic wire; pending this completion of telegraphic communication, advices signalled will be forwarded to the nearest postal telegraph office at Helston for transmission.

95.—**DARDANELLES STRAIT.**—With the view of facilitating the navigation of the Dardanelles, buoys have been placed on the edges of the banks and ends of the spits, near the shores of that strait. The position and description of the buoys are given as follows: Entering from the Marmora Sea,—

1.—*Dohan Arslan.*—A *white* buoy, on the extreme edge of the Dohan Arslan shoal, in 7 fathoms of water, one mile off shore, with the village bearing north.

2.—*Diana N.E.*—A *red and white* buoy on the N.E. extremity of the Diana shoal, in $5\frac{1}{2}$ fathoms of water. From the buoy, Gallipoli lighthouse bears W. by S., the Tcherdack lighthouse S.W., and Fanus point S.E. $\frac{1}{2}$ E.

3.—*Diana, S.W.*—The Diana shoal, being a most extensive flat, reaching from Fanus point to the Tcherdack lighthouse, a *red and white* buoy has been placed on the S.W. extremity, in $5\frac{1}{2}$ fathoms, S.W. by W. $2\frac{1}{2}$ miles from the N.E. buoy, and N. $\frac{1}{2}$ W. $\frac{3}{4}$ mile from the Tcherdack lighthouse.

4.—*Lampsaki Spit.*—A *red and white* buoy in $5\frac{1}{2}$ fathoms on the end of Lampsaki point spit, at a little more than half a mile off shore. From it Tcherdack lighthouse bears N.E. $\frac{3}{4}$ E., and Gallipoli lighthouse N. by W. $\frac{1}{2}$ W.

5.—*Galata Spit.*—A *red* buoy, in 7 fathoms, on the end of Galata point spit. From it Tcherdack lighthouse bears E. by N. $\frac{1}{2}$ N., and Gallipoli lighthouse N.E. $\frac{1}{2}$ N.

Fisherman's Bank.—A *red and white* buoy on the extreme edge of the Peschieri, or Fisherman's bank, in 5 fathoms, with the Peschieri lighthouse bearing W. by S. $\frac{3}{4}$ S. one mile, and Galata lighthouse N. by W.

7.—*Moussakioi.*—A *red and white* buoy on the extreme edge of an extensive shoal, lying off Moussakioi, in $5\frac{1}{2}$ fathoms, from which Peschieri lighthouse bears N.E. by E., and the Tekeh on C. Sestos W. $\frac{3}{4}$ N.

8.—*Towshan Point.*—A *red and white* buoy on the extreme edge of the shoal off Towshan point, in 5 fathoms, at 2 miles distance S.W. by W. $\frac{1}{2}$ W. from the last-mentioned buoy. From it C. Abydos bears W. $\frac{1}{2}$ S., and the Tekeh on C. Sestos N.W. $\frac{1}{2}$ W., and lies in $5\frac{1}{2}$ fathoms.

9.—*Cape Sestos.*—A *red* buoy off C. Sestos, in 7 fathoms, from which the centre of Bovali Kalessi bears W. $\frac{3}{4}$ S., and the Nagara lighthouse S.W.

10.—*Nagara Spit.*—A *red and white* buoy on the Nagara spit in 7 fathoms, from which the centre of Nagara castle bears E. by S. $\frac{1}{4}$ S., the centre of Bouvali castle N. $\frac{3}{4}$ W., and the spire of Maitos Church W. by S. $\frac{1}{4}$ S.

11.—*Kephez-Bournou*.—A red and white buoy on the extreme edge of the shoal off Kephez-Bournou (Barber's point), in 6 fathoms S.W. $\frac{1}{2}$ W., half a mile from the lighthouse.

12.—*Kavanlik Liman*.—A red and white buoy at the extreme edge of the extensive shoal at Kavanlik Liman (marking an anchorage greatly used by sailing vessels whilst waiting for favourable weather) in 5 fathoms, a little more than $1\frac{1}{2}$ miles to the east of Coom Kalessi. The best holding ground will be found near the buoy, in a line between it and the Coom Kalessi point. From the buoy Cape Hellas lighthouse bears N.W., and Coom Kalessi lighthouse West.

13.—*Morto Bay*.—A red buoy at the shoulder of the extensive flat lying off the western shore of Morto bay. It lies in 6 fathoms, and from it the ruined battery on the eastern point bears N.E. by E., and the Seddul Bahr lighthouse W. $\frac{1}{3}$ S.

14.—*Yeni-Sher, N.E.*—A red and white buoy, in $6\frac{1}{2}$ fathoms, on the N.E. shoulder of the Yeni-Sher bank at about three-quarters of a mile off shore. From it Coom Kalessi lighthouse bears E. $\frac{3}{4}$ N., and Cape Hellas lighthouse N. by E.

15.—*Yeni-Sher, S.W.*—A white buoy on the S.W. shoulder of the Yeni-sher shoal, in $5\frac{1}{2}$ fathoms, S.W. $\frac{1}{2}$ S. one mile from the N.E. buoy. From it the most northern windmill at Yeni-Sher village bears East, and Cape Hellas lighthouse N. by E. $\frac{1}{2}$ E.

96.—UNITED STATES.—*Mobile Harbour*.—A fixed white light, of the fourth order, 46 feet above the level of the sea, and visible 12 miles, is now exhibited from a screw pile lighthouse, 6 cables east of Choctaw point. The lighthouse is painted straw colour.

97.—TORRES STRAIT.—*Great North-east Channel*.—A sunken rock (*Saddle rock*) has been discovered, lying E. $\frac{1}{2}$ S., $1\frac{1}{2}$ miles from Saddle island, and near the fairway track; the rock has only 6 feet over it at low water. Position, lat. $10^{\circ} 10\frac{1}{2}'$ S., long. $142^{\circ} 42\frac{1}{2}'$ E. *Note*.—To avoid this danger, vessels, after passing Bet island, should haul well to the southward, giving Saddle island a wide berth before steering for Ninepin rock, which latter is steep to, and may be passed on either hand.

98.—AUSTRALIA.—*Port Philip*.—*Portarlington Jetty*.—A green light, 22 feet above the sea, which should be seen 5 miles, is now exhibited from the end of the jetty; it is visible from W. by S. $\frac{1}{2}$ S., round by S. to S.E. by E $\frac{1}{2}$ E. *Note*.—The light in sight in, clears the north side of Prince George bank to the east; and the buoy of Point Richards to the west.

99.—ENGLAND.—*East Coast*.—*Lowestoft*.—*Corton Gateway*.—The channel of this gateway having become dangerous to navigation, there being now only 10 feet water at low water springs, it is to be closed by removing the buoys and marks.

100.—NEW ZEALAND.—*Auckland harbour.*—*Bean rocks.*—A light-house has been erected on the Bean rocks, entrance of the harbour. The light is a *fixed red, white and green* light, arranged thus: *Red*, in the Tehmaki strait, between the bearings W. $\frac{1}{2}$ S., to S. by W. $\frac{3}{4}$ W. *White*, in the Koreho channel, between S.W. by W. $\frac{3}{4}$ W., to S.W. $\frac{1}{4}$ W. *Green*, from the Koreho channel to Rangitoto channel, from S.W. $\frac{1}{4}$ W. to S.S.E. $\frac{1}{2}$ E. *White*, in the Rangitoto channel fairway, from S.S.E. $\frac{1}{2}$ E. to S.E. $\frac{3}{4}$ S. The western edge clears Rough rock. *Red*, from the Rangitoto channel to Auckland harbour, between S.E. $\frac{3}{4}$ S., to E. by N. $\frac{3}{4}$ N. *White*, in the fairway of the harbour from E. by N. $\frac{3}{4}$ N. to N.E. $\frac{1}{2}$ E. Eclipsed from N.E. $\frac{1}{2}$ E., round by north to W. $\frac{1}{2}$ S. The light is 50 feet above water, and should be seen about 10 miles. *Directions.*—Vessels entering Auckland harbour by the north, or Rangitoto channel, should make the *white*, or fairway light, and keep it in sight until the summit of North head bears S.W., then cross the *red* light into the *white* harbour fairway light, and bringing the three lights on Queen street wharf to bear S.W. by W. $\frac{3}{4}$ W., this will lead up the harbour to the usual anchorage below the wharf. Vessels having to work in should not enter on the *green* light, when near Rangitoto reef, or when the peak of Rangitoto bears E. $\frac{1}{4}$ N., nor on the *red*, when the flagstaff on Mount Victoria bears S.W. $\frac{1}{4}$ W., as with this latter bearing they will be in the vicinity of Rough rock. *Entering* by the Tehmaki strait, the *red* light will be seen over the low southern part of Koreho island, take care not to approach within one mile of the island; pass through the *red* into the *white* fairway light of Koreho channel; then steer so as to pass about 2 cables north-west of the lighthouse, crossing the coloured lights of the Rangitoto channel into the *white* harbour fairway light. Vessels entering by the Hieh channel, must keep on the intersecting line of the *green* and *white* lights, S.W. $\frac{1}{4}$ W., edging away into the *white*, in passing the north-west extreme of Hieh island, and thence up the Koreho channel and into the harbour, as before described.

The beacon that formerly stood on the Bean rocks is now erected on the north-east extreme of the Bastion reef S.E., 8 cables from the lighthouse.

CHARTS, ETC., PUBLISHED BY THE HYDROGRAPHIC OFFICE, ADMIRALTY,
IN THE MONTH OF APRIL, 1872.

Sold by J. D. POTTER, 81, Poultry, E.C.

No.	Scale.		s.	d.
289.	m = 1.0	Newfoundland, west coast, Bonne bay, and bay of islands	1	6
292.	m = various	Newfoundland, southern portion, harbours and anchorages	1	6

CHARTS, &c.—*continued.*

No.	Scale.		s.	d.
767.	d = 2·0	South Pacific Ocean, Panmotu or Low Archipelago	2	6
980.	d = 2·0	North Pacific, Caroline islands	2	6
765.	m = various	South Pacific, Union group of islands ...	1	0
766.	m = various	South Pacific, south-eastern group of the Ellice islands	1	0
791.	m = 0·1	Pacific, Gilbert islands, with plans	2	6
782.	m = 0·5	Pacific, Gilbert islands, plans of anchorages ...	1	6
719.	m = 1·0	New Zealand, Middle island, Dask and Break-sea sounds	2	0
720.	m = 1·0	New Zealand, Middle island, Preservation and Chalkey inlets	1	6
2448.	m = 1·0	British Columbia, approaches to Fitz-Hugh and Smith sounds	2	0

SOCIETIES, MEETINGS, &c.

ROYAL GEOGRAPHICAL SOCIETY.

ON Monday, the 22nd April, a valuable paper was read by Captain Sherard Osborn, R.N., on "The Exploration of the North Polar Basin, and a *résumé* of the German and Austrian attempts to reach the Polar Circle from the Atlantic Ocean." The author detailed at length the praiseworthy exertions made by the Germans following the theory of Dr. Petermann, who advocated, against three centuries of English experience, a route following what he believed to be a current of warm water flowing to the north-east towards Spitzbergen and Nova Zembla. Seven years had now elapsed, and, in spite of the zeal, enterprise, and courage with which the German explorers had endeavoured to give effect to this theory, the result proved the theory to be wrong, and that experienced Arctic voyagers who thought with him (Captain S. Osborn) to be right. The results of the German efforts confirmed English opinion that there was no navigable passage between Spitzbergen and the coast of Greenland, the Pendulum Islands and the adjacent coast of Greenland being the farthest point north reached by the Germans, as it had been fifty years before by the English navigators. Referring then to expeditions undertaken by Swedish explorers between 1858 and 1868, Captain Osborn quoted their opinion in confirmation of British experience. They recorded their opinion that an open polar sea was mere hypothesis,

destitute of all foundation from experience, and they, too, endorsed the opinion of English explorers that the only probability of succeeding was by dog-sledges in the spring. Captain Osborn then gave a *précis* of a voyage made by two Austrian officers last year into the sea between Spitzbergen and Nova Zembla, who thought of following the supposed gulf stream. Having recounted these, Captain Osborn expressed the opinion that all those signs read by the light of Arctic experience pointed to the existence of land. Captain Osborn, while admitting that there might be many open spaces, if not a continuous channel of open water, late in the autumn, say October, extending from Nova Zembla, along the shores of Asia, to Behring's Straits, which might be well worth exploring, contended that the reports of these two officers clearly indicated that they had merely approached the lands which previous visitors to Spitzbergen had reported were to be seen to the east and the north, which were generally known under the term Gillie's Land, or, more recently, King Charles's Land; and that the Polar basin would not be explored by any expedition in that direction. Summing up, he said, another seven years' labour had only confirmed old Arctic experience that the outpour of the Polar ice was too heavy and continuous from Gillie's Land to Greenland for any ship to penetrate through it. There was evidently land to the northward of the Nova Zembla sea, and the south-west gales of the Atlantic forced up a body of warm water in the autumn, by which a route might be found round Nova Zembla into the open water on the Siberian coasts. On these grounds, and those before stated in his previous paper, he urged the Royal Geographical Society to turn their earnest attention during the present summer and autumn towards a resumption of the exploration of the Polar area by way of Baffin's Bay and Smith's Sound, and by means of sledge travelling parties, such as had explored so many hundred miles [of coast line in former years. That route recommended itself, first, because it was the most advanced known position towards the Polar area, with almost continuous land extending to 82 degrees N. lat. Secondly, that from it, to the north-east and west, important geographical results awaited them; and thirdly, because that route offered the best guarantee for the safety of the people employed in the exploration of a vast unknown area. If the Arctic Committee, at present sitting under their distinguished and veteran associate, Admiral Sir George Back, could show on those grounds that Polar explorations could and ought to be carried out, he trusted, for the sake of his country and his profession, that the Admiralty might be induced to open to the Royal Navy this field for glorious enterprise and national renown. An interesting discussion ensued, in which Admiral Sir George Back,

Professor Hooker, Admiral Richards, Admiral Sir Leopold M'Clintock, Dr. Carpenter, Mr. Scott, of the Meteorological Department, and other gentlemen took part, all agreeing to the propriety of an expedition.

[The energy displayed by other countries in Arctic exploration is in strange contrast to the action of the English nation in this matter. We have before urged the desirability of our country taking steps in this direction, and it was with peculiar satisfaction that we listened to the observations of the eminent men who seconded Captain Osborn's suggestions. We hope, indeed, that we shall now stir ourselves and send out daring and able men, of whom we have plenty available, to help to solve the important geographical question, and to complete the exploration begun by us in years gone by, but apathetically abandoned of late.—ED.]

ANSWERS TO CORRESPONDENTS.

C. J. B., R.N.—Captain D'Ancona's Meteorological paper will be continued as soon as our space will permit. We quite appreciate its value, and your anxiety to benefit the nautical community.

J. W. J. HARVEY, BRISTOL.—Your tracings of Double-beat Safety-Valve received. We have referred it to our professional adviser on such subjects, and will communicate result in our next.

ERRATA.

In our March number the heading of the first column of table in Mr. Wymer's paper on "Riveted Seams," page 240, should read, "Number of times the diameter of rivet is contained in the pitch."

Also in March number, page 245, 13th line from top, for "144" read "128." And at page 246, 6th line from top, for "2,762" read "27,627."

"Riveted Seams," by Mr. McFarlane Gray, with several whole page illustrations, is in type, but owing to pressure on our space we are obliged to defer it.

"Safety Valves and Steam in Motion" is deferred on account of the Safety Valve competition.

THE
NAUTICAL MAGAZINE.

NEW SERIES.

JUNE, 1872.

THE CHAIN CABLES ACTS.

It will be in the minds of most of our readers that, until the year 1864, no organised system existed to provide the purchasers of chain cables with any means of ascertaining that the cables they purchased were capable of sustaining a strain sufficient to make them of any value to the ship and those on board in cases of emergency. Messrs. Brown Lennox, at Millwall and the Mersey Dock and Harbour Board, at Birkenhead, possessed trustworthy machines, and so did the Admiralty, at Woolwich; but beyond these three machines there was not one in the country that could be relied on as capable of applying an accurate test to a chain cable. We have only to read the report made by Mr. Thomas Gray and the late Mr. Galloway, after an inspection of the then existing testing machines, to be satisfied on this point. The loss of life at the wreck of the *Royal Charter*, after parting from her cables, called public attention to the matter, and Mr. Laird, M.P. for Birkenhead, introduced the Chain Cables Act of 1864. The Act of 1864 never has found favour with the Government, because it is conceived and founded on compulsion. When Mr. Milner Gibson, the then President of the Board of Trade, relieved Mr. Laird of the charge of the Bill, the former gentleman did what he could to obtain the adoption of a voluntary scheme which would have established trustworthy and independent proving houses to which persons wishing to prove chain cables might have sent them, in the spirit suggested in the paragraph numbered

5 below. The House of Commons, however, and as we think, and as we endeavoured to show in another case, in our leader on personal responsibility last month, took a wrong view of the subject and of the principles that ought to be observed in dealing with questions affecting trade, and went in wholly for compulsion. Every cable was to be tested, whether the maker was a man of the highest reputation, or was the merest pettifogger, and whether a high or a low price was paid. The House of Commons went too far, for, in requiring that every cable should be proved, they had to provide for the proving, and to do this they actually solemnly enacted in effect that a maker of a cable might test one of his own manufacture at a machine of his own, and might thereupon issue a certificate of statutory proof. Mr. Gibson, however, did one thing, he made the Act terminable on a certain day.

Although the Act never found favour with the Board of Trade, we are bound to say when they once had charge of it they administered it in such a manner as to make it really of use, and to command not only the approval but the respect of all persons interested. The Act is defective, as we shall point out below, its principle is bad, as we have pointed out above; but, on the whole, and in a rough and ready way, it has been of use.

It was amended and perpetuated last year. It is much to be regretted that, owing to pressure of business, the lateness of the session, and other causes, an attempt was not then made to urge on the House of Commons the principles contended for by Mr. Milner Gibson; but, as this was not done, the compulsory principle of the Act of 1864 was accepted, and was perpetuated, and secured by further restrictions. The Act of 1871 cannot, however, come into operation, because there are not sufficient machines to do the work. This is not the fault of the President of the Board of Trade, but is due entirely to the fact that most of those public bodies who took steps to get their names included in the Bill as public testers under the Act, have gone to sleep since, and have taken no steps to meet their responsibilities, or to provide for the wants of the Trade.

The Act of 1864 would have expired on the 1st July, 1872, had it not been made perpetual by the Act of 1871. The Acts of 1864 and 1871 are, after the 1st July next, to be read and construed as one Act. The Act of 1864, which we will, for convenience, call the old Act, was intended to apply to chain cables made for exportation, as well as to chain cables made for British ships; but it has, in practice, never been so applied. Here is defect number one. The old Act allows a manufacturer himself to test chains for the proof mark, and for a certificate of proof;

and it allows this test to be applied in the manufacturer's own yard, at his own machine, and by his own men. Here is defect number two. The old Act further requires all chains to which the test is applied to be tested to a uniform "proof" strain for each *size* of iron, without reference to its *quality*. Here is defect number three. The new Act, which is to come into operation in July next, makes the following important amendments in the old Act. In the first place, all chain cables *made* and sold in the United Kingdom are to be treated alike, whether they are for foreign or for British ships. In the second place, chain cables are no longer to be proved under the Acts, at the manufacturer's premises, or at machines owned by joint stock companies, but at machines worked by public bodies. In the third place, an additional strain, called a "breaking" strain is to be applied, in addition to the so-called "proof" strain. The "breaking" strain is to be applied to three links only, and the proof strain is to be applied as before to the whole fifteen fathoms at once. The object of the "breaking" strain is to ensure that the iron which is employed to make the chain, and the chain itself, are of such a quality as not to be injuriously affected by the "proof" strain.

The President of the Board of Trade (the Right Hon. Chichester P. Fortescue) has informed gentlemen interested in the subject, that he proposes to bring in a Bill to defer the operation of the Act of 1871. This action has been asked for on many grounds, two of which only are pertinent—viz., 1, that the Act ought *not* to apply to cables for export; and, 2, that there are not now, and are not likely to be for some time, enough public machines in existence to apply the tests. Looking to the discussions last year; looking to the fact that foreigners have as much right to protection as British subjects as regards chains made in the United Kingdom; and to the fact that the right hon. gentleman, consistently last year succeeded in applying the Act to chain cables for export, we do not think that those who now ask that the Act should not apply to such cables, will be successful; at all events, for reasons somewhat lengthy, which we need not here record, we trust they may not be successful.

As regards the second of the grounds we have named for postponing the operation of the new Act, we confess we think they are conclusive. It is not possible for the Act to come into operation as there are not machines to do the testing; and it is wise to look the circumstances in the face, and meet them, rather than to leave things alone, and wait for an inevitable break down. It may not be devoid of interest if, for a few moments, we consider some of the expedients by which the present circumstances can be met. The most obvious appear to be the following, viz.:

1. To sweep away both the old and the new Act; but this would be sweeping away that which many people regard as a highly useful piece of legislation; would be running counter to the views of the House of Commons, as embodied in the two Acts; and would be to stultify altogether the recent action of the Government who carried the Act of 1871.

2. To suspend the operation of the new Act for a time (say twelve months) and to extend the operation of the old Act for the same time. This would leave the export trade untouched, would not throw on existing machines more than their proper quantity of work, and would get over the difficulty. In fact, it would leave things as they are for a year. But it would get over the difficulty for a year, and for a year only; would prevent the legal and authorised application of the "breaking" strain, even where parties might desire to apply it; and, it is urged, would be scarcely fair to those makers who have been striving to make chains sufficiently good or have contracted for chains to meet the new test; or to those testing-machine proprietors who have done their best to get the breaking machines ready.

3. To make the public "proof" strain compulsory on all cables, whether for export or not, and to leave the test to the "breaking" strain to be applied voluntarily, as may be agreed between the parties. This would be a step in the right direction, in so far as it would ensure a public and independent proof strain in all cases, which the mere prolonging of the old Act would not effect. It would, besides, enable the breaking strains to be applied from time to time as the breaking machines are completed and licensed, and it would be more fair to those chain makers who have prepared iron and have made chains to comply with the new Act. But there are not sufficient public machines to do the work of applying even the proof strain to all chains, for we must not forget that, whereas, under the old Act, there are thirty-two of such machines, including those in makers' yards, under the new Act there are at present only fourteen proof strain machines for the whole work.

4. To extend the old Act for a year, and to leave the breaking strain to be applied voluntarily, or unless by written contract the parties agree to forego the breaking strain. This, like proposal No. 2, would certainly meet every difficulty for a time, and would, besides, be fair to those makers who have made contracts to comply with the new Act. It would further, if a contract were required when the breaking strain is not to be applied, indicate to owners, inspectors, and underwriters, that inferior chains are on board. But it would only meet the difficulty for a year, and would still leave the public test of exported chains to be then

provided for. And, further, it would, as it were, throw a slur on those chains that were not tested to the "breaking" strain; and this, not because the owners may not wish them tested, but because, owing to the absence of "breaking" machines, owners are compelled by circumstances to contract that that strain shall *not* be applied.

5. To leave the application of both the "proof" strain and the "breaking" strain by a public machine, to the option of the parties buying and selling. This would also meet the difficulty. It would be putting the buyer and seller of a chain in the same position as the buyer and seller of a spoon. If the buyer wish for an uncertificated and unstamped chain, he could get it, or if he wish for a certificated and stamped one, he could get it. It is probable that the majority of chains would, as machines are constructed, be tested voluntarily to both strains, because the Committees of the Register Books (Lloyds, Liverpool, Veritas, etc., etc.) would probably desire to have chains tested before classing ships; and because respectable owners would wish it. It would, moreover, be more in accordance with those principles of freedom in business transactions which are accepted in this country. It would, further, settle the question at once, and not merely stave it off for a year, and would be doing what Mr. Milner Gibson originally wished. But it would be substituting a voluntary principle for the principle established deliberately by Parliament, and affirmed by Mr. Fortescue's Act of last year. It would also, perhaps, be inflicting a temporary hardship on those makers who have prepared for a compulsory breaking strain.

We have not adverted to a proposal that the new Act should be left in operation, and the "breaking" strain be applied by the "proof" strain machines, because these proof strain machines would be rendered useless in a very short time by the rough usage of breaking samples; and because there are not enough of them to do the work.

We must not only bear in mind the fact that, at the present moment, there are not enough public machines to test all chain cables made in the country, but we must bear in mind the further and more important fact that it will be difficult to establish enough even in one year, when, as is manifestly the case, no one will set about doing it. That things have arrived at the present pass is, as we have already stated, owing chiefly to the apathy of those public bodies and corporations who asked for and obtained power to set up machines, but who have done nothing more in the matter.

Looking, then, to the supineness of those bodies: looking to the fact that it does not appear to be to the particular interest of anyone to establish machines: and looking also to the fact that the

shipowners have not attempted to bring their influence to bear towards the effective providing of public machines in most of the great shipping ports and centres of trade: looking to all these circumstances, is it not reasonable to suppose that the practical sense of the country is *not* now in the direction of continuing the compulsory test of all cables made in the country? If this is so, then we think it is only fair to put this question—viz., Will not the President of the Board of Trade, and will not the House of Commons be acting in accordance with the present views of the country if the one introduces and the other accepts a modification of the Act in the sense denoted in paragraph 5 above? Such a modification will enable underwriters and owners to obtain a public test if, and when, they desire it, and will be in accordance with the principles embodied in the Report of the Select Committee on Steam Boiler Explosions, presided over last session by the hon. member for Bolton.

The easier course, under all circumstances, is that indicated in the paragraph numbered 2 above; but we must not remove from our minds the fact that there is no guarantee that any one of the bodies named in the Act will, even in a year, meet the difficulties now existing through the absence of a sufficient number of testing machines.

PRIZE FOR THE MODEL THREE-INCH SAFETY VALVE.—We have received £5 from Messrs. Maudslay and Field, and promises as follows:—Finnieston Steam Ship Works, Glasgow, per Mr. Robson, £5; Barclay, Curle, and Co., Engine Works, Glasgow, £5. We have fixed three inches, so that all drawings and models may be of one size; not because three inches is at all the size that must be invariably adopted for all boilers. We believe there will be competitors from the Continent and from the United States.

COST OF SAVING LIFE.—The following figures are compiled from various returns presented to Parliament:—

Total number of life-boats in 1870, 257.

Total sum contributed by the Board of Trade to the Life-boat Institution from 1857 to 1870, inclusive, £45,708 15s. 5d. No contribution since 1869. Total for other rewards from 1857 to 1870, inclusive, £5,153 18s. 5d.

No. of stations for rocket apparatus in 1870, 284. Total number of companies and brigades of volunteers in 1870 was 140. Total cost of rocket apparatus from 1857 to 1870, inclusive, £72,169 7s. 8d.

Total number of lives saved by life-boats from 1857 to 1870, inclusive, 5,652. Total number of lives saved by rocket and mortar apparatus from 1857 to 1870, inclusive, 4,745.

THE BRITISH CONSTITUTION AND GOVERNMENT :
A DESCRIPTION OF THE WAY IN WHICH THE LAWS OF ENGLAND ARE
MADE AND ADMINISTERED.

(Continued from our May Number.)

CHAPTER V.—THE RESPONSIBILITY OF MINISTERS.

THE object of this chapter is to explain what is meant when people speak of the responsibility of Ministers. Every official, whose duties have been briefly described in the last chapter, is, of course, responsible for the discharge of those duties, just in the same way as every person who undertakes to serve another is responsible. Equally, as a matter of course, the superior officers incur greater responsibility upon undertaking the duties of their several posts than the inferior. The principal Secretary of State for the Home Department, for instance, incurs greater responsibility than the Under Secretary for the Home Department, whom he appoints. This, however, is not the full meaning of the word "responsibility," as applied to Ministers of the Crown.

A long time ago the great officers of State were appointed by the Sovereign, without much regard to their qualification for the offices they were appointed to. The King appointed whom he chose, and the office-bearer very often considered only the personal interests of the King, without having any regard whatever for the interests of the King's subjects. Thus we read of a King appointing his favourite companion Lord Chancellor, and perhaps we read of the same favourite doing very bad actions as Lord Chancellor, without losing his office. Nor did it matter in those days whether the King's Ministers had seats in Parliament or not. It is the same now in theory, but it has become the practice never to appoint anyone to fill the high offices of State who has not a seat in either one or other of the Houses of Parliament, because it is felt to be necessary that the heads of departments should always have the confidence of the people, and be liable to be called to account in Parliament for their acts. And this is the key to the whole matter. The Ministers of the Crown can carry on the government of the country without the assistance of the House of Lords and the House of Commons up to a certain point; and the work they have to do can be done quite well without any interference upon the part of Parliament, but for two things. In Chapter II., which describes the position of the Crown, it is stated that the King can declare war against any foreign Powers, without asking the permission of Parlia-

ment. This is true, but inasmuch as Parliament passes the Mutiny Act for only one year, the King and his Ministers would have no control over the army and navy, unless Parliament chose to re-enact the Mutiny Act year by year; consequently, although the King may declare war, it is the people who say whether the war shall be carried on; and no Minister would advise the Sovereign to declare a war unless he was quite sure the people would agree to continue it. In the same way Parliament does not authorise the imposition and collection of taxes for more than one year at a time, consequently Parliament must be called together once in each year to vote money, or supplies to the Crown. If this were not done, neither the soldiers, nor marines, nor any of the servants of the Crown, could be paid, and the whole machinery of the Government would come to a stand-still. Parliament being called together the Ministers of the Crown must severally make their appearance in one or other of the Houses of Parliament, and make known the wants of the Crown. Immediately they appear in Parliament the representatives of the nation can call them to account for their acts during the time Parliament has not been sitting. Each Minister has to answer for the good management of his own department, and if any Minister has committed any great mistake, his conduct immediately becomes the subject of discussion; but although the act criticised may be the act of a single Minister, the whole Cabinet accept the responsibility of it, and regard it as an act of the Sovereign, done in accordance with their advice. So important is the good and wise conduct of a Ministry held that this discussion takes precedence of every thing, and no business is transacted until it is disposed of. The debate may continue over many days; and all the colleagues of the Minister whose conduct is questioned will do their best to defend him, and in the end the question will be put to the vote. This is called a Ministerial crisis, and the motion a motion of want of confidence. If the result of the voting should be that a larger number vote in condemnation of the act of the Minister than in approval of it, the whole of the Ministers resign their places, including every official whose duties are described in the last chapter. We must observe that the members of the Government resign, not because the Sovereign is displeased with the manner in which they have managed affairs, but because the House of Commons is displeased with the advice they have given to the Sovereign; and we must notice further that although many of those who voted in condemnation of the particular act would in all other respects approve the conduct of the Ministry, yet, notwithstanding it is only a single act of a single Minister which is condemned, no Government could remain in office after this condemnation has been pronounced by Parliament. This is the most remarkable feature in the practical

working of the British Constitution. In the first place, the responsibility of every single act of every individual member of the Cabinet is accepted by the whole body of the Government, and all are united in defending each other; but immediately any single act of any individual Minister is condemned by the elected representatives of the country, they all feel the reproach and forfeit the dignity and emoluments of office, because they are too honourable to hold a post a single day after their competency to discharge its duties with credit to the country has been called in question. They have, however, one alternative. If they have reason to believe that their policy is approved by the country itself, though not by the then existing House of Commons, they can advise the Sovereign to dissolve Parliament and cause another to be elected, so that the voice of the country itself shall be expressed upon the point at issue. This is called appealing to the country, and if the new Parliament is of the same opinion as that which was dissolved, the Government has no choice and must resign.

No sooner has a Government resigned than a new one has to be appointed, and this is one of the very few occasions upon which the personal views and wishes of the Sovereign have direct influence upon the course of events, but even in this case the Sovereign's wishes are not supreme. The Sovereign must appoint, as Prime Minister, one in whom Parliament has confidence, or who, in other words, is trusted by the country; and the Prime Minister, charged by his Sovereign with the duty of forming a Government, must, as we have already seen, in the first place, find some twenty other men among his adherents competent and willing to undertake the duties of the principal offices of State, and then having found them, all those whom he has chosen, who happen to be members of the House of Commons vacate their seats immediately they accept the office to which they have been appointed, and have to go to their constituencies and ask to be re-elected. Thus it comes to pass that the appointments made by the Sovereign have to be endorsed by the electors, and although, technically speaking, the appointments are made independently altogether of the wishes of the people, and entirely at the pleasure of the Sovereign, unless those Ministers who are commoners, can secure re-election, they are bound to resign their posts, and others must be appointed in their stead. This, however, seldom occurs. Appointments to high offices of State are made with so much care, and the men chosen are of such high repute, that it is seldom a constituency cannot be found to re-elect them, even if their former constituency prefers another in their stead.

It is, therefore, no exaggeration to say that, although the ministers of the Crown are not actually nominated by the people as represented in

the House of Commons, they are practically so appointed, and, as a matter of fact, hold office during the pleasure of Parliament. The natural consequence is that they are careful to exercise the royal authority in such a manner, or, as it is technically described, give such advice to the Sovereign, as they believe will be approved by a majority of the people, and that not a small, but a very large majority. Now, if it happened that the Sovereign wished to submit a measure to Parliament which the Cabinet believed would be contrary to the will of the people, they would refuse to give their consent to his proposals, and if he were to insist they would resign, and he would have to find some ministers who would endorse his proposals before they could be even submitted to Parliament. If, for instance, he desired to imprison anyone who was personally obnoxious to him, as Kings in former times often did, he would have to find a Cabinet which would approve his wishes. If he were successful in securing such a Cabinet, which would in these days be almost impossible, the policy and legality of the act would be called in question in Parliament, and the Ministers who advised it would be compelled to resign. As no Ministry would act so unwisely as to give advice which they knew would inevitably lead to their resignation, the King would find it impossible to do this improper thing although supreme; and under these circumstances we may truly say the King can do no wrong. But the very same reasons which make it impossible for the King to procure a Cabinet which will take the responsibility of advising him to do wrong, also induces the Cabinet to give advice exactly corresponding with what they believe the wish of the country to be. In proportion, as a Minister does this he is said to be successful or the reverse; and as all Ministers try their utmost to act in accordance with the wishes of the country, that they may the longer retain power, the official acts of the Sovereign are as nearly as possible the exact expression of the will of the people, so we may fairly say that when the King acts it is the people themselves who act.

CHAPTER VI.—PARLIAMENT.

PARLIAMENT, technically speaking, consists of the Crown, the House of Lords, and the House of Commons, but the word "Parliament" is commonly used to represent the House of Lords and the House of Commons as opposed to the Crown, and we shall use the word in that sense, especially as it has come to us from the French word *parlement* discourse, and is commonly understood by us to mean a deliberative assembly.

It will have been gathered from the foregoing chapters that although the whole authority of the Sovereign and all the powers necessary to govern the country reside in the hands of the Cabinet, who, with the less prominent members of the Government, form the Executive, yet the supreme power of control is held by Parliament. How this has come to pass forms the most interesting portion of the history of our country, but as this work is designed merely to describe things as they are in the present day, the growth of the power of Parliament forms no part of our subject.

Parliament consists of two chambers, commonly called the House of Lords and House of Commons, and sometimes styled the Upper and Lower House respectively.

THE HOUSE OF LORDS.

The House of Lords is composed of the nobility of the land, who are called Peers, or equals, and of the Archbishops and Bishops of England. The Peers are styled Lords Temporal, and the Archbishops and Bishops, Lords Spiritual. The Peers are divided into three classes, each of which holds a position in relation to Parliament, different from that of the other two. The first class is composed of Peers who sit in their own right, either as heirs to the dignity of the Peerage, or by virtue of having been created Peers by the Crown. The second class consists of sixteen Scotch Lords, elected by the Peers of Scotland, to represent them during the Parliament then called; and the third class of twenty-eight Irish Lords, elected by the Peers of Ireland to represent them for life in successive Parliaments. This distinction between the different Peers arises from the changes which have occurred, from time to time, in the relation existing between England, Ireland and Scotland. In former times, when the three portions of the United Kingdom each had its Parliament, the Peers of Scotland and Ireland sat in their own Houses of Lords, and when the Union was negotiated, an arrangement was come to by which the Peers of Scotland and the Peers of Ireland should be represented in the Parliament of the United Kingdom. It was accordingly agreed that the Scotch Peers should elect sixteen of their number for each Parliament, and only for the Parliament; and when the Union with Ireland was negotiated, it was settled that the Peers of Ireland should elect twenty-eight of their number to represent them for life. The same cause has given rise to a distinction between Peers who sit by right of their peerages. There are Peers of England, who hold peerages created by the Crown before the year 1707, the date of the Union between England and Scotland; Peers of Great Britain, who represent peerages created between the years 1707 and 1800, when Ireland was united to Great Britain; and Peers of the United Kingdom,

who sit in right of peerages created since the year 1800. There are yet further distinctions which should be drawn between Peers in their relation to Parliament. Several Scotch and Irish Peers have succeeded to peerages, or have been created Peers, with the right to sit in Parliament; and, although they are commonly known by their Scotch or Irish title, they are not elected Peers, but sit in their own right as Peers of the Realm. The Duke of Argyll, for instance, sits as Baron Sundridge, and the Earl of Longford sits as Lord Silchester in the peerage of the United Kingdom. Those Peers of Ireland who are not chosen to represent their body in Parliament may offer themselves as candidates to represent English or Scotch constituencies, but not Irish, in the House of Commons. Scotch Peers, however, have no such privilege: unless returned by their Peers to the House of Lords they cannot sit in Parliament. There is one other difference between the peerage of Ireland and Scotland: Peers of Scotland are no longer created, so that in time the distinction between Scotch Peers and Peers of the United Kingdom may die out; but for every three peerages of Ireland that become extinct, the Act of Union entitles the Crown to create one new peerage, and when the number of Irish Peers is reduced to 100, one new peerage may be created for every one that becomes extinct.

The following are the titles of Peers set down in their order of precedence:—Duke, Marquis, Earl, Viscount, and Baron. The title of Lord is common to all. But, although all Peers may be addressed by the title of "Lord," it must not be supposed that all persons who are styled "Lord" are Peers of Parliament, because the eldest sons of Dukes, Marquises, Earls, and Viscounts, sometimes bear by courtesy the inferior titles, conferred upon or inherited by their fathers, and are commonly known as Marquises, Earls, or Viscounts. For instance, the heir to the Duke of Buckingham is commonly styled the Marquis of Chandos. The younger sons of Dukes, Marquises, and Earls also are styled by courtesy Lord John or Lord Henry, as the case may be. But these titles confer no Parliamentary privileges, and those who bear them are commoners in the eye of the law.

The Archbishops and Bishops of the Established Church of England and Wales sit and vote by virtue of their office as Spiritual Peers, with the exception of two: the Bishop of Sodor and Man, and the last Bishop appointed. If, however, the last Bishop appointed should be the Bishop of London, Durham, or Winchester, he takes his seat at once, and the prelate last appointed before him continues to be excluded until a vacancy occurs in one of the other sees. The Archbishops of Canterbury and York are also excepted from this rule. The Bishop of Sodor and Man may sit in the House of Lords, but may not vote.

Peers who sit in Parliament by their own right, that is, the Peers of England, Great Britain, and the United Kingdom, take their seats on the assembling of Parliament as a matter of course, although in olden time they had no right to sit and vote in Parliament unless summoned by the writ of the Crown. The right of the Bishops to sit in the House of Peers is more obscure, but custom has sanctioned the title of English Bishops as well as Peers to sit and vote in the House of Lords without question. Bishops, however, are regarded as Peers in no other respect. They rank after Barons, and cannot, as Peers, claim to be tried by a jury of the House of Lords on being charged with any breach of the law.

The number of Peers composing the House of Lords is not fixed; it amounts to about 460, but it is liable to decrease by the death of Peers without heirs, and to increase by the creation of new Peers. Peers who are minors or imbecile or bankrupt do not sit in the House of Lords. In former times, the Kings of England conferred the dignity of the peerage upon subjects as often from caprice or favoritism as from any other cause, but now the dignity is conferred by the Sovereign on the advice of the Ministers of the Crown, and is generally bestowed upon men who have done distinguished service to the State, either as politicians, men of letters, or lawyers, or as great military or naval commanders. The House of Lords is thus composed of the most distinguished men in the country, or the descendants of those who, in their day, had made themselves famous, by rendering distinguished service to the State.

The Lord Chancellor, who is, as we have seen, a member of the Government, presides over the House of Lords, and when acting in this capacity he is styled the Speaker of the House of Lords. It is not necessary that he should be a Peer, but he is usually created a Peer on his appointment, and being so he has a right to join in debate and to vote in the same way as any other Peer, but he has no casting vote when upon a division the numbers are found to be equal. When the House is sitting upon ordinary occasions, the Lord Chancellor takes his place upon the Woolsack, wearing a full bottom wig and a plain black silk gown. The Woolsack may be described as a large ottoman, stuffed with wool. It is supposed that this was the kind of seat used by the president of the most ancient councils held in England, and that it was so used in order to remind the people of the importance of cultivating wool as an article of merchandise. This seat is not, technically speaking, in the House, so that when the Lord Chancellor, being a Peer, wishes to exercise his right to address the House, irrespective of his position as Lord Chancellor, he advances three steps forward. He puts all questions to the House upon which a vote has to be taken, but it is no part of his duty to keep order or control the House, because the Peers do not acknowledge that any one of their number is superior to the rest: they are all Peers or equals.

There is a Deputy Speaker of the House of Lords, who is also Chairman of Committees. He takes the place of the Lord Chancellor whenever the latter is absent, and if both are absent, any Peer may be nominated President for the time being. The title of "Speaker" comes from the fact that one of the duties of the Lord Chancellor as President of the House of Lords is to represent it and speak for it when it desires to address the Sovereign or any other person or persons.

There are several other officials connected with the House of Lords, the duties of whose offices will become more clear when we come to describe the Parliament in the actual conduct of business. In the first place, there is the gentleman Usher of Black Rod, and his deputy the Yeoman Usher of Black Rod. These officers are the servants of the Crown appointed by the Sovereign to wait upon the House of Lords. When officiating they appear in Court dress and carry a black rod, bearing upon its top a golden lion seated. The Serjeant-at-Arms is in like manner appointed by the Sovereign to wait upon the House of Lords. He stands behind the Lord Chancellor in the House of Lords, and carries the mace before him as he enters and leaves the House. The mace and great seal are placed upon the Woolsack while the House sits. The great seal is carried after the Lord Chancellor by the Deputy Serjeant-at-Arms.

There are also three clerks appointed to sit at the table of the House. The chief is the Clerk of Parliaments, who calls on the business; the second is his Deputy, who makes a record of what business is transacted; and the third is the Reading Clerk and Clerk of Private Committees, who reads all documents required to be read in the House.

THE HOUSE OF COMMONS.

The House of Commons is composed of the representatives of the third estate of the realm, the Commons, chosen according to law. It numbers 658 members, 404 of whom represent cities and boroughs, and 254 counties. England and Wales sends 500, Scotland 53, and Ireland 105. These members are chiefly composed of country gentlemen, members of the learned professions, and successful merchants and manufacturers, who, either by their personal talents, social position, or wealth, have been able to inspire the Electors of some portion of the country with confidence. Many of them are the sons and heirs of Peers, and some are Peers of Ireland who have been returned by English constituencies. The Marquis of Hartington, son of the Duke of Devonshire, is an instance of the former; the late Lord Palmerston is an instance of the latter. Unlike the House of Lords, the House of Commons consists

entirely of these elected members. No one has a seat by prescriptive right, and none but those elected are allowed to enter the chamber on any pretext whatever, except a few appointed officers.

The summoning of Parliament, which includes calling together those having seats in the House of Lords, as well as those who have been elected to represent the Commons, depends upon a resolution come to by The Cabinet. Let us suppose that there is no House of Commons in existence, and that The Cabinet resolve to advise the Crown to call Parliament together. The Crown immediately holds a Council, which is attended probably by two or three of The Cabinet, and an Order is made by the Sovereign, directing the Lord Chancellor to issue writs for the election of representatives to serve in the House of Commons. This is done forthwith. The writ names the day and place of meeting, and directs the returning officer in every city, borough, and county in the kingdom to make arrangements for the election of representatives to serve in the Commons' House of Parliament. The returning officer in counties is generally the Sheriff of the county, and in cities and boroughs the Mayor. Upon receipt of the Lord Chancellor's writ, the returning officer issues a notice, fixing a day upon which the electors shall nominate their representative, and if upon that day more candidates are nominated than are required, the returning officer fixes a day upon which a poll of the electors shall be taken. Upon that day, every elector who chooses attends at one of the places appointed, which are called "polling places," and there records his vote for the candidate he desires should represent him. In due time the returning officer adds up the number of votes polled by each candidate, and declares those having the largest number to be elected. In most cases where the candidates outnumber the seats possessed by a borough or county, each candidate employs a large number of agents, who go from house to house trying to persuade the electors to vote for their employer. This practice, although not positively illegal, is discountenanced by the more honourable, not only because it leads to much unnecessary expense, but because it tempts the uneducated elector to regard his power to vote as a piece of property, which may be sold, rather than as imposing a duty to be discharged. Some electors, although they would refuse a bribe in money for their vote, often seek to obtain some advantage to themselves or their friends in exchange for it. Promises of personal advantage, however, are as much bribes as payment of money and equally dishonourable, and those who are influenced in voting by motives of gain of any sort show themselves to be enemies to their country and undeserving

of good government. So, also, those who seek to influence voters by improper means, by promises of advancement, or by threats of harm in the future, and those who use any means to hinder electors from voting freely, all do grievous harm to the country. Laws have accordingly been made from time to time to punish those who misconduct themselves in this way, and on each occasion the law has been amended the punishment has been made more severe. Each elector should regard the vote he possesses as a trust, and remember that in voting he is bound to discharge that trust for the public good, that, in fact, he is as responsible to the country for the motives which influence him in giving his vote as is any Member of Parliament for any vote he may give in the House of Commons itself.

Formerly, it was necessary that a man should possess a certain amount of property to qualify him to sit in Parliament, but now any one may be a member of the House of Commons who can induce a constituency to return him, except an alien, a minor, one mentally imbecile, a peer, a clergyman of the Established Churches of England and Scotland, or a priest of the Roman Catholic Church, a judge other than the Master of the Rolls, a Government contractor other than a loan contractor, a bankrupt, and persons attainted of treason or felony, who are as dead in law. But, inasmuch as attendance at the sittings of the House of Commons occupies a great deal of time, no one who has to earn his livelihood can afford to accept the position, because members of the House of Commons do not receive any pay whatever for any service they may render as members of Parliament either by sitting and voting in the House or by sitting on Committees. Still the position is much coveted because of the social distinction it carries with it, and the influence in the State which it confers. The position also carries with it its peculiar temptations. The votes of members of the House of Commons are often anxiously solicited in respect of certain measures called "private bills," which are promoted by persons who hope to benefit by them. Such persons would be not unwilling to give money for a vote if they thought such a bribe would be accepted, and on this account it is held to be inexpedient that men of small means should to any great extent be induced to enter the House of Commons. Certainly, if we think only of what is desirable, we should all agree that every member of Parliament should be a paragon of honour, be perfectly secure from the influence of all baser motives, and never give a vote in favor of any measure unless he believes it will confer good upon the country.

Not only has the property qualification of members of Parliament been abolished, but changes have been made from time to time in respect of

the persons who are entitled to vote for members of Parliament, commonly called the electoral qualification, in the number and character of the places represented, commonly called the constituencies, and in the number of members each constituency should return. These changes constitute what is called the Reform of Parliament, and are embodied in Reform Bills. The necessity for these reforms arises out of changes which are daily occurring throughout the country. Places which were once small villages, having no right to return a member, gradually grow into large towns; and large towns having that right, lose their importance from some cause or other, and decrease in population. When this is found to be the case, the right to return the members is transferred from the decaying town to the flourishing community. The right to return members of Parliament and the number of those members is generally determined by population, but although for the sake of convenience members are always returned from particular places, it should always be remembered that a properly constituted House represents all the classes of the community, and indeed the object of all reforms is to secure the representation of all classes. Just as the House of Lords represents the aristocracy and the clergy through the Peers and the Bishops, so the House of Commons should represent landowners, merchants, shipowners, manufacturers, lawyers, doctors, and members of other learned professions, shopkeepers, mechanics, and day labourers. The lower classes are, however, always more or less imperfectly represented, because, although the poor have votes and have power to withhold those votes from the sitting member at a future election should he displease them, the knowledge of this is not always sufficient to overrule the influence upon the member's mind of the class to which he himself belongs. And as the majority of members of the House of Commons are wealthy, they have a tendency to side with the wealthy whenever the question at issue is a question of the rich as against the poor. This has given rise to the reproach that our Government, even in its most popular form, is a plutocracy, or a Government composed of the rich. The only way in which this can be corrected, and as, indeed, it is continually being corrected, is for the people to make themselves acquainted with their rights, to watch the proceedings of Parliament, to call their respective representatives to account from time to time, and in all other respects to exercise the powers conferred by the franchise. This matter is wholly in the hands of the electors themselves, and if every elector throughout the kingdom were to do this and to vote for the man whom he believes in his heart will best serve his country without regard to any other consideration whatever, either of hope of reward or fear of incurring displeasure, there would be no fear of legislation for the benefit of one class at the expense of another.

(To be continued.)

M M

CASTLE HERTZSTEIN.

BY PERCY HAMILTON.

Perched upon a peak of basalt, grimly Castle Hertzstein stands,
And the country folks will have it, 'twas not built by mortal hands.
Well they ask how human fingers could pile up such masonry,
Block on block, until the turrets seem to creep into the sky.

Foes have never sacked the castle, many bold and brave have tried;
And the Hertzsteins ruled as tyrants in the insolence of pride.
But at last high heaven has listened to the cry of the oppressed.
Buried lies the last Count Hertzstein, and the people are at rest.

Now a lady owns the castle, dainty, young, and passing fair,
Very like a pictured angel—melting eyes and sun-bright hair;
Every beauty is united in the Lady Gisla's face;
Every word is full of music, every movement full of grace.

Who would think that eyes so tender never glistened with a tear?
That the heart in that soft bosom never knew the name of fear?
Yet 'tis so; that shy demeanour, those sweet looks are nought but lies;
'Neath the gentle garb of woman lurks a demon in disguise.

Scores on scores of high-born suitors seek to win her tiny hand:
But to all she shyly answers, "If you love me or my land
"Bring your charger to my castle, mount, and round my ramparts ride,
"And, when you have made the circuit, come and claim me for your bride."

Very narrow is the pathway, very deep is the abyss,
And there is no wall or railing 'twixt it and the precipice;
At the first slip horse and rider must whirl from the dizzy height,
Till they lie deep in the valley, crushed and crashed, a ghastly sight.

When a knight starts on the journey, to a turret straight she hies,
And looks down with pleasure dancing in her bright demoniac eyes;
There she watches for a stumble, with her red lips ripe to mock,
Screams with glee when horse and rider fall, and dash from rock to rock.

Many high and gallant suitors thus have ridden to their doom,
Down below their bones are bleaching, grass and reeds their only tomb.
What to her are two more victims—one more rider, one more horse?
And the grass down in the valley richer grows for every corse!

But at last there comes a suitor, far more gallant than them all,
Of the lady asks permission to ride round her castle wall.
For the first time Lady Gisla feels love stirring at her heart,
And would give her lands and castle not to let her suitor start.

He has started, and the lady watches him with bated breath;
"Never was there horse so steady!" whispers she as pale as death.
"Will he make the journey safely? Yes! he will!—the first, the last!
"He is safe," she cries with rapture, "all the danger now is past!"

Quick she flies to bid him welcome, offers him her lily hand,
 And proclaims him lord and master of her heart and of her land.
 Then she leads him to her bower, gives him there a burning kiss,
 And declares, with heaving bosom, she is his and only his.

They are wedded in the chapel, where the marble Hertzsteins sleep;
 In his eyes a strange fire flashes, love has taught her eyes to weep.
 As they issue from the portal shouts of greeting fill the air.
 "Was there ever braver bridegroom? Was there ever bride so fair?"

Suddenly a death-like pallor kills the blushes of the bride,
 When she sees her palfrey waiting, to the chapel doorway tied.
 "Why is this?" she asks her bridegroom, with the mimic of a smile.
 "Will you take me from my castle? Let us stay a little while!"

"Mount! Before you lies a journey, very well you know the way,
 I and many more have trod it. I am here, but where are they?"
 "I had once a well-loved brother, now he rots beneath your walls,
 There he lies, unwept, unburied, loud his blood for vengeance calls."

"Spare your prayers! They do not move me; at your tears I only scoff!
 Let me lift you on your palfrey, he is pawing to be off!"
 And the people, fickle ever, echoed every word he spake—
 "Let her take the self-same journey she has made her lovers take."

"Give me space," she pleaded, weeping, "Sorrow for the past to tell,
 Just to make my peace with heaven; just to bid thee, love, farewell!"
 "Love hath shown me I am guilty, but love came, alas, too late!
 Had I seen and loved thee sooner, I had met a happier fate."

"I was bred by heartless tyrants—taught, like them, to thirst for blood,
 Till the woman was unwomaned, evil took the place of good.
 None to love, and none to love me, childhood left me motherless;
 Love for thee has changed my nature: kill me, still thy name I'll bless."

Then he looked on her with pity, and of pity love was born,
 Whilst he thought with bitter trouble of the oath that he had sworn—
 That, if he should make the journey, she should take the self-same ride—
 And he gazed with love and sorrow on his sweet repentant bride.

Suddenly his features brightened, lost their pale and ashy hue.
 "Take the palfrey, bring my charger! lady, I will ride with you!"
 "I must see you take the journey, for I cannot break my oath;
 Safely has my good horse borne me, he will safely carry both."

Safely round the charger bore them, she lay fainting in his arms,
 And he looked with love past telling on the lady's countless charms.
 Then she raised her eyes and whispered, "Love, with thee I could have died.
 Now I live, thou mayest love me; love my soul has purified."

WHERE WHALEMEN COME FROM, AND SOMETHING
ABOUT THEM.

THE Shetlanders and other north and east countrymen of Great Britain, will read with some feelings of surprise the following account as to the manning of United States whalers. In Great Britain the crews of whalers, especially Shetlanders, are sometimes the victims of an objectionable "Truck" system, but in this, as in many other cases, they must acknowledge that our American Cousins beat us. It is curious that our Cousins have not yet been able to institute the beneficial system of engaging and discharging their seamen in an orderly way, at properly appointed offices. If they but once experienced the advantages of established Mercantile Marine Offices, and the concurrent advantages of Seamen's Money Orders and Seamen's Savings' Banks, conducted by responsible persons, such a picture as is drawn below of the iniquities arising out of their present absence of system would be impossible. The following statement appears to be genuine, at any rate it ought to be, since it is reproduced from the *Sailor's Magazine* of New York, which is published under the authority of fourteen clergymen, not to mention the "Hon. Wm. A. Buckingham," and captains and esquires without number. As to ourselves we know nothing of the "dingy, dank apartment" referred to, but on the faith of the undoubtedly responsible and respectable godfathers of the New York magazine, we do not hesitate to reproduce the pictures with which their magazine furnishes us:—

"Nearly all the men that man the large whaling fleets which annually depart from New Bedford, New London, and Nantucket are procured in New York, and are almost always poor waifs, literally cast upon the world—hungry, homeless, and friendless, and in consequence become the easy prey of the cormorants delegated to provide whale-ships with crews. In a dingy, dank, and dark-looking apartment into which the light of the sun is never seen to enter, and where you are almost stifled by the nauseous vapour emitted from stale tobacco-smoke, mouldy furs, damp woollens and other fœtid and filthy processes, is located the 'office' of the whale-ship agent, who is almost always a retired whaler, and who is generally well calculated to impose upon the credulity of the homeless wanderers who apply to him to ship. There can hardly be another place in the world where the freaks of fortune can be so thoroughly studied as in the narrow, confined limits of these shipping-offices. On low benches, arranged around the room, can be seen at least a dozen men and boys, most of them ragged, dirty, half-starved and forlorn-looking creatures, and some much the worse off with vile rum. How

various, indeed, will be found the incentives which have impelled the poor outcasts to seek the hard and hazardous life which they are about to follow! In almost every instance, rum and its necessary consequent, poverty, have been the great and primal causes of their misfortune. In the clutches of the sharks at almost any time when a vessel is about sailing on a long whaling voyage, can be seen boys not quite entirely abandoned, but in a fair way of being so; broken-down gamblers who have risked and lost all; men once well off who have been ruined by the frenzy of speculation; in fact, the bankrupt merchant, the lawyer, and the poor fellow whom strong drink has sent far on the road to ruin, can all be seen comingling and fraternizing on the ground of common misery in the gloomy room of the shipping agent. It is, indeed, a place full of heart-aches. Many of these pitiful creatures have had high aspirations, genius bright and strong, kindly sympathies and noble impulses, and all this power of mind and heart and spirit lies crushed beneath the overwhelming weight of their misfortune. At best, however, a whaler's crew is an anomalous collection of unfortunate humanity—gentlemen, born and bred, associating with the very lowest grades in the social scale.

“It was the misfortune of the writer to be thrown into the company of the crew of a wrecked whaler when on a visit to the Arctic, some years ago. The composition of the ship's company was just as it has been described above. There were one or two unfortunate fellows, educated gentlemen, in this crew, who were brought daily into contact with just such characters as the following, and compelled to associate upon terms of intimacy with them. Mills was an old bounty jumper, and prided himself upon evading the law and authorities, and boasted of being an ex-hanger-on of some circus company. He was exceedingly ignorant, and like all ignorant men, foolishly prone to vaunt his fancied knowledge. In an extended experience in the army the writer has never met a being who had so much of the brute and so little of the man in him. He was the only creature in that dissolute, motley mixture of humanity who had not one redeeming virtue; indeed, he seemed to be the embodiment of all that was evil. Wolff, a burly, overgrown bully, an adept in blasphemy and ribaldry—in fact, in violence and artistic vituperation he had no equal. Morally a blackguard, and physically a giant, he had but one remarkable and redeeming trait, which was his veracity. The misery of a life with such as these for three long years cannot be conceived.

All these men were driven by the direst necessity to embark in the dangerous calling, and, allured by soft promises into the belief that they would better their pecuniary condition, they willingly seized at anything

which gave the faintest promise of alleviating their misery. It is generally not many weeks after the step has been taken before the dreams of modest wealth begin to melt away before the astonished eyes of the amateur whaler. Worked like slaves, and often treated with the most shocking inhumanity, they drag through the long months in the service of men who are well able to better their condition. The history of any one of these unfortunate men, from the time he first enters the shark's office, on down to the period when his voyage is ended, is nothing more than one long catalogue of sufferings and hardships almost incredible. It seems hard to think, that after being imposed upon and swindled by the shipping agent in the most outrageous manner, and after all his toil, should the vessel return to port filled with oil—of which the man before the mast is supposed to have a share—from keelson to sail, not one gill can the whaler claim as his own. With an enormous bill for clothing, for which he is generally charged ten times their value, with three years' interest on the amount, shipping fees that are only another means of illimitable extortion, not the fiftieth part of the sum which has been charged to him will he receive for his labour of three years. Then the poor fellow is, after three long years of incredible hardship, returned to New London or New Bedford, a stranger in a strange place, with no friends, no money, not knowing where to go. Surely this is a burning disgrace upon human labour; and in a free, enlightened land that this is so, is a reflection upon the law-makers nothing will excuse."

PROBLEMS.

1. A steamer describing a circle going *astern* with rudder hard over, whether is the stem or the stern nearer the centre of the circle? (This question, with respect to going *ahead*, was answered by Commander Goodenough, in our April number.)
2. How can you weigh every pound from and including 1 lb. to 40 lb. with only four weights? What are the four weights? Give the working.
3. Is a cubic foot of nothing transparent or opaque? Give the reasons for your opinion.
4. Astronomers allege that the moon now apparently takes (some few seconds) less time to complete her course around the earth than formerly. If this be so, whether would you say that the moon is falling in (*i.e.*, coming nearer) towards the earth, or that the earth is revolving more slowly on her axis; and what reason would you give?

NORTH ATLANTIC CURRENT CHARTS.

Currents and Surface Temperature of the North Atlantic Ocean, from the Equator to Lat. 40° N., for each Month of the Year. Published by the authority of the Meteorological Committee. (Stanford), price 2s. 6d.

We read in the Preface that "the present Charts afford more minute information as to currents and surface temperature, than has hitherto been attainable, being the only Monthly Current Charts which have yet appeared," but such a modest announcement conveys a very important impression of the value of the work.

All previously existing general current Charts, such as that issued by the Admiralty with their "Pilot Charts," and that in Berghaus's Chart of the world, refer to the entire year, and exhibit the results of the discussion, without affording any means of judging of the facts on which that discussion is based. It is therefore easy to see that the appearance of these Charts, in which the information is given for each month, and for each district of $2\frac{1}{2}^\circ$ square, must throw a totally new light on the study of ocean currents.

The first thing that strikes us on looking over these Charts is the very small modicum of facts which has been the basis for all the wordy war waged by Dr. Carpenter, and his opponents, for the last two years. It has always been a mystery to us how able men, like those of whom we are writing, can go on reasoning, when the very facts about which they are speaking are, to say the least of them, imperfectly known. Yet we hear the most positive assertions made about compensating polar currents flowing, at greater or less depths, under the surface, when the evidence for their existence is very shadowy, and that for their direction and velocity is absolutely nil!

The unsatisfactory state of our present knowledge of currents is sufficiently shown by the absolute upset which all previous theories sustained when the facts were published which resulted from the first dredging expedition in H.M.S. *Lightning*, in 1868.

Among other points we see that the present Charts afford no sort of confirmation to the old idea that the waters of the Atlantic equatorial current made the circuit of the Gulf of Mexico, and issued as the Gulf stream from that basin. We find the temperature of the Gulf stream, at its first appearance on the west coast of Florida, several degrees lower than that of the equatorial current, so that their waters must be totally distinct from each other.

The very remarkable patch of cold water on the equator in 25° W., or thereabouts, which has been noticed by many observers, is clearly shown

in several of the months, but in order to exhibit the phenomenon completely, the Charts ought to extend into southern latitudes.

We can trace the cold southerly current, flowing down the north-west coast of Africa, which, as Dr. Hooker has found on his recent visit to Mount Atlas, brings the Arctic shells to those almost tropical seas.

In the comparatively unfrequented parts of the ocean we find hardly any observations, so we look in vain in these Charts for information of all the eddies in the West India Islands, where, *e.g.*, at Sombrero the current will sometimes set, for days together, in a direction diametrically opposite to its usual course.

The Charts are so drawn that any one can enter his own observations on them in their proper squares, and so add to the value of their contents, and we can safely say that no captain, who makes any pretence to a thorough knowledge of his profession, should attempt to cross the line without them.

Not the least valuable part of the publication are the temperature observations which have been extracted from the Dutch Temperature Charts. We are far too fond, as a nation, of despising foreign scientific work, and so it is satisfactory to see that the Meteorological Committee are above such prejudices, and present to the public translations of papers bearing on Meteorology, whatever may have been the language in which they have appeared.

RIVETED SEAMS.

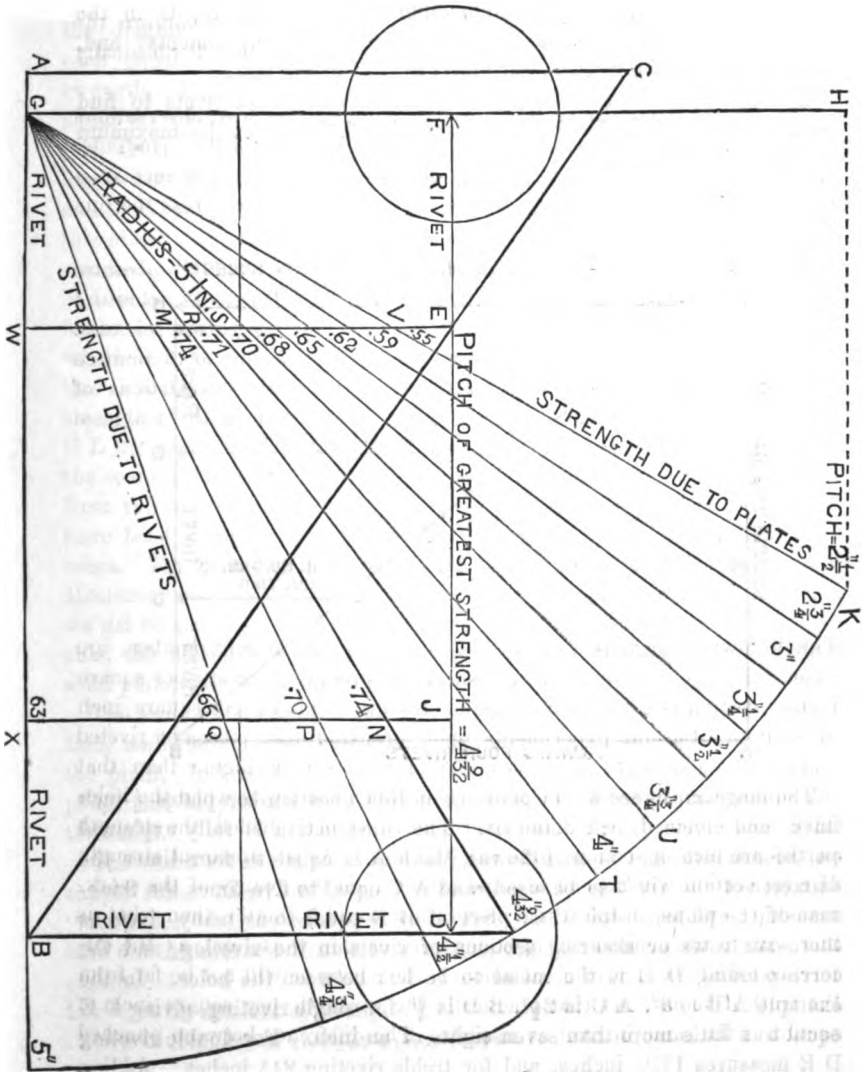
By J. MCFARLANE GRAY, MEM. INST., M.E. AND N.A.

THE following rules, as well as the table given in March number, are based upon the principle that the shearing strength of rivets per square inch of section is equal to the tensile strength of plates per square inch of section. Careful experiments upon prepared test pieces of riveted work, show a strength per square inch of rivet section higher than that per square inch of section of plate left between the rivets when the holes have been punched. When the rivet holes have been drilled, the strength per square inch of section is the same in both. As the apparent strength of rivet section will depend to some extent upon the quality of the workmanship; and as, in the tested pieces, this would be better than what is met with in the general run of boiler work or ship work, and as the difference found was not of great amount, the surveyor will not be far from the truth if he assumes that practically the strength per square inch of section is the same in rivet as in plate. The difference between punched

RIVET DIAGRAM.—No. 1.

DRAWN FOR $\frac{3}{8}$ -in. PLATES;
 TWO ROWS OF $1\frac{1}{8}$ -in. RIVETS;
 Or, ONE ROW, WITH DOUBLE SHEAR.

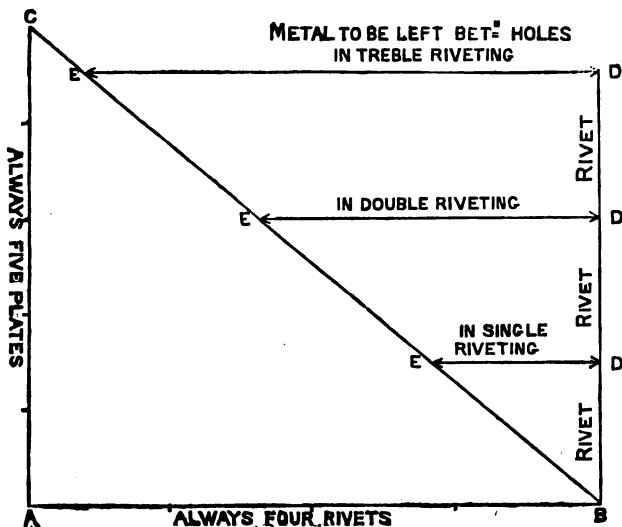
A C = 5 times the thickness of the plate.
 A B = 4 times the diameter of the rivet.



holes and drilled holes will be felt on the rivets as well as on the plates. The holes will be fairer and better filled. In ordinary boiler work, this strength may be taken as 18 tons, or say 40,000 lbs. per square inch with punched holes, and as 21 tons, or say 47,000 lbs. per square inch, with drilled holes. In the following diagrams A C is drawn as $5\frac{1}{16}$ times the thickness of plate, this corresponds with strict equality in the strengths, but the more convenient number, 5 times, which make a scarcely appreciable difference in the result, is in the direction of the conclusions arrived at from these experiments; and, therefore, it may be in every case used instead of the $5\frac{1}{16}$.

I. Given the thickness of plates and the diameter of rivets to find what metal should be left between each rivet-hole to get the maximum strength of seam.

DIAGRAM No. 4.



The diagram, figure 4, is a solution of this question for plates $\frac{1}{2}$ -inch thick, and rivets $\frac{3}{4}$ -inch diameter. The construction is fully explained on the diagram, and is as follows: Make A B equal to four times the diameter of the rivet to be used, and A C equal to five times the thickness of the plates. Join B C. Set off B D equal to as many rivets as there are rows or shearing sections of rivets in the riveting, and the corresponding D E is the metal to be left between the holes. In the example A B is 8", A C is $2\frac{1}{2}$ ", B D is $\frac{3}{4}$ " for single riveting, giving D E equal to a little more than seven-eighths of an inch. For double riveting D E measures $1\frac{2}{3}\frac{1}{3}$ inches, and for treble riveting $2\frac{1}{3}$ inches. Adding

the diameter of rivet to these, we get the pitch for single riveting $1\frac{5}{8}$ " full, for double riveting $2\frac{1}{2}\frac{1}{3}$ inches, for treble riveting $3\frac{3}{8}\frac{1}{6}$ inches.

Butt-joints with double straps, the rivets having double shear, count twice, that is, one row of rivets count as two, two as four.

Butt-joints with single straps, the rivets count as in lap joints.

II. To find the strength of a riveted seam for given plates and given rivets.

Diagrams No. 1, 2, 3 (see pp. 477, 480, 481). Having constructed the diagram as in No. 4, continue D E to F, make E F and D J each equal to one rivet, then D F is the pitch for maximum strength. Draw F G, E W, J X, from G as a centre with radius equal to five inches, describe the arc L K. Continue B D to L, join G L. The line G L measures ten half inches; the whole line is 100 per cent., and each half-inch is 10 per cent. On No. 1, G N and M L each measure nearly $7\frac{1}{2}$ half-inches, that is 74 per cent., and this is the strength of the riveted seam for which that diagram is constructed. The portion G N is the strength of the rivets, and the portion M L is the strength of the plates. The strength for any other pitch is found by setting off the pitch from the line H G to the arc, as at K, where H K is pitch $2\frac{1}{2}$ inches, the strength of plate is measured on the line G K; the portion between the line E W and the arc is always the strength of plate, and is 65 per cent. for $2\frac{1}{2}$ " pitch. On the lines above G L the plates have least strength, and therefore measure the strength of the seam. The strength of rivets is always measured on the radial line from the centre G to the line J X. On the lines below G L the rivets have least strength, and they, therefore, measure the strength of the seam. For pitch $4\frac{3}{4}$ " the strength is 66 per cent of the solid plate. Measuring on the same line from the line E W to the arc at $4\frac{3}{4}$ " pitch, we get 81 per cent. as the strength of the plate, but that is not available, the strength of the seam at $4\frac{3}{4}$ pitch is only 66 per cent. of the solid plate, that is the strength due to the rivets.

The same letters apply to all the diagrams. They require no calculation, and show at a glance how the strength is affected by altering the pitch. In Nos. 1, 2, 3, A C is drawn $5\frac{1}{10}$ times the thickness of the plate, but in practice it is better to make it simply five times the thickness.

The same results can be arrived at arithmetically by the following simple rules, based on using 5 instead of $5\frac{1}{10}$ as above. The word "thickness" begins with the letter T, and so does the word "tenth"; take the thickness of the plate in tenths, and all the other dimensions in eighths:—

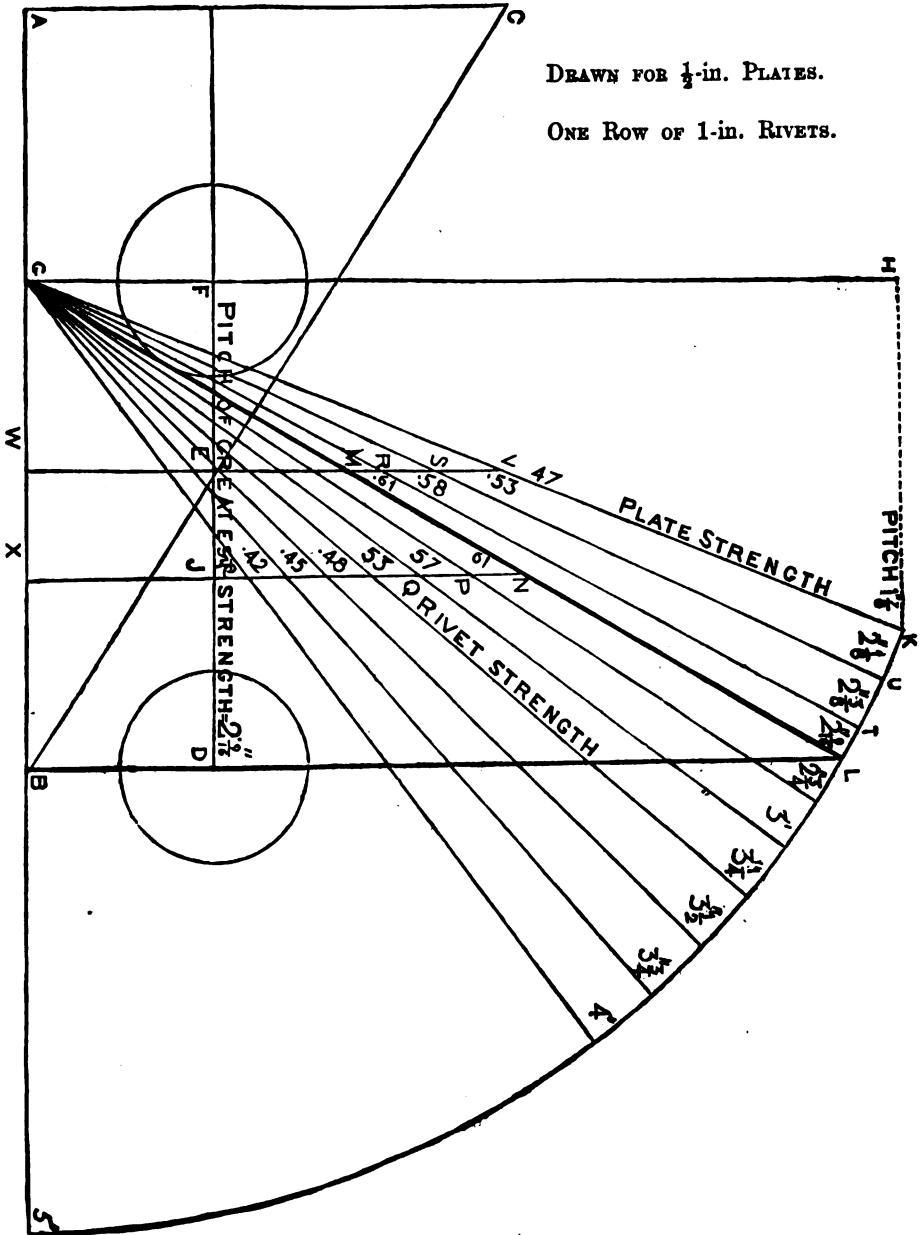
Let C = Co-efficient of strength.

d = diameter of rivet in eighth parts.

RIVET DIAGRAM.—No. 2.

DRAWN FOR $\frac{1}{2}$ -in. PLATES.

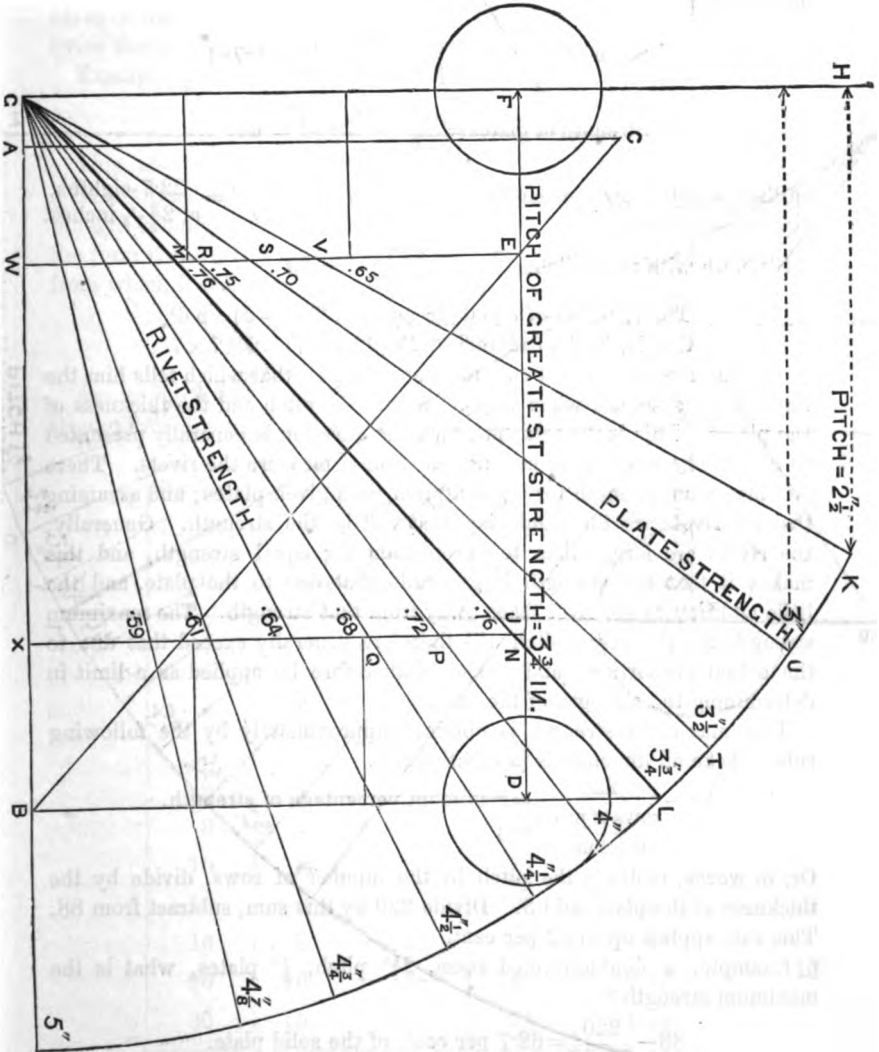
ONE ROW OF 1-in. RIVETS.



RIVET DIAGRAM.—No. 8.

DRAWN FOR $\frac{1}{4}$ -in. PLATES.

THREE ROWS OF $\frac{1}{4}$ -in. RIVETS.



Let p = pitch in eighth parts.

T = Thickness of plate in Tenths.

n = number or rows of rivets, or number of shearing sections of rivets.

As an example, let there be two rows of $\frac{7}{8}$ -inch rivets, and let the plates be $\frac{5}{8}$ " , that is, 6.25 tenths ; let the pitch be $2\frac{1}{2}$ inches, that is, 20 eighth parts.

$$\left\{ \begin{array}{l} \text{Strength of rivets} = \frac{n d^2}{p T} = \frac{2 \times 7 \times 7}{20 \times 6.25} = .784 \\ \text{Strength of plates} = \frac{p-d}{p} = \frac{20-7}{20} = .65 \end{array} \right.$$

$$\left\{ \begin{array}{l} \text{Pitch for greatest strength} = d + \frac{n d^2}{T} = 7 + \frac{2 \times 7 \times 7}{6.25} = 22.7\text{-eighths,} \\ \text{or } 2\frac{3}{4}\text{ inches.} \\ \text{Strength with that pitch} = \frac{p-d}{p} = \frac{22.7-7}{22.7} = .69 \end{array} \right.$$

The criterion of equal strengths is $T(p-d) = n d^2$,
that is, in the example, $6.25(22.7-7) = 2 \times 7 \times 7$.

But the most important rule for a surveyor is, that which tells him the limit to the strength, when he knows only the pitch and the thickness of the plates. This is the form in which the question is generally presented to him. The boiler is in use, and he cannot measure the rivets. There is a maximum strength for a given pitch, with given plates ; and assuming that the rivets are the right size, that will be the strength. Generally, the rivets are larger than the proportion for equal strength, and this makes it that the strength is generally that due to the plate, and the little addition to the rivet takes away from that strength. The maximum strength for the given pitch will therefore generally exceed that due to the actual proportions, and it should therefore be applied as a limit in determining the strength of the seam.

This maximum strength is obtained approximately by the following rule. Take all dimensions in eighth parts.

$$88 - \frac{220}{\frac{\text{rows} \times \text{pitch}}{\text{thickness}} + 3} = \text{maximum percentage of strength.}$$

Or, in words, multiply the pitch by the number of rows, divide by the thickness of the plate, add 3. Divide 220 by this sum, subtract from 88. This rule applies up to 82 per cent.

¶ Example, a double-riveted seam, $2\frac{1}{2}$ " pitch, $\frac{7}{8}$ " plates, what is the maximum strength ?

$$88 - \frac{220}{\frac{2 \times 20}{7} + 3} = 62.7 \text{ per cent. of the solid plate.}$$

It is evident, then, that, whatever the rivets may be, the strength of this seam should not be taken as simply a double riveted seam, at 70 per cent.

The following rule is much simpler, and will be sufficient for all ordinary practice, but it is not applicable beyond 70 per cent.

$$50 + \frac{2 \times \text{rows} \times \text{pitch}}{\text{thickness}} = \text{maximum percentage of strength,}$$

or, in words, divide the pitch by the thickness of plate, multiply by twice the number of rows, and add to 50.

Example, pitch $8\frac{3}{8}$ ", plate $\frac{3}{4}$ ", double riveting.

$$50 + \frac{2 \times 2 \times 8\frac{3}{8}}{\frac{3}{4}} = 68 \text{ per cent.}$$

This, also, is only an approximation.

The former rule is in the simplest form I can give to it; it may be thought complicated, but it is not tedious, and the reader may appreciate the form it has when he contrasts it with the following primary formula, from which it is derived.

$$C = 1 + \frac{.6866t}{np} - \sqrt{1.2782 \frac{t}{np} \left(1 + \frac{.8184t}{np} \right)}$$

According to this exact formula, the following are the co-efficients of strength for differences of proportion of pitch and plate:—

Number of times the thickness of plate is contained in the pitch.				Maximum Percentage of strength in proportion to solid plate.
Single riveting.	Double riveting.	Treble riveting.	Four rows.	
4	2	$1\frac{1}{3}$	1	57.28
5	$2\frac{1}{2}$	$1\frac{2}{3}$	$1\frac{1}{4}$	60.69
6	3	2	$1\frac{1}{2}$	63.84
7	$3\frac{1}{2}$	$2\frac{1}{3}$	$1\frac{3}{4}$	65.48
8	4	$2\frac{2}{3}$	2	67.27
9	$4\frac{1}{2}$	3	$2\frac{1}{4}$	68.84
10	5	$3\frac{1}{3}$	$2\frac{1}{2}$	70.18
12	6	4	3	72.80
16	8	$5\frac{1}{3}$	4	75.41
20	10	$6\frac{2}{3}$	5	77.75
30	15	10	$7\frac{1}{2}$	81.82

From this we see that to get 70 per cent. of strength, the pitch \times the number of rows must be at least 10 times the thickness of plate, that is, in double riveting, the pitch should be five times the plate for 70 per cent. of strength.

It is an easy matter to determine the proportion of strength there is left at a seam, but that has not always a direct bearing upon the strength of a boiler. The general construction and liability to strains of expansion and contraction, and cracks from over-heating, are important considerations in determining the safe pressure of a boiler. An examination of the boiler explosion diagrams, published every year, shows clearly that there is a great deal more in boiler inspection than mere strength of seam. A boiler I had to do with lately has had ten seam rips, some of them 2 ft. long, all in the cross seams, which have only half the strain of the fore and aft seams, while the latter were quite uninjured. I have thought it necessary to add these remarks, lest these tables should do harm instead of good.

P.S.—Since the above was in print, I have read an excellent paper on this subject, by Mr. Walter R. Browne, published in the proceedings of the Institution of Mechanical Engineers. Mr. Browne directs attention to the crushing or crippling of the plate that takes place before the rivet, and ascribes to this action in many cases the rupture that takes place in the plate in the line of the rivets. The conclusion arrived at by him is that the diameter of a rivet, in lap-joints, should not be more than $2\frac{1}{2}$ times the thickness of the plate. Also, that for double shear, that is, with double cover strips, the diameter of the rivet should not exceed $1\frac{1}{2}$ times the thickness of the plate. In boiler work the rivets of lap-joints are always less than $2\frac{1}{2}$ times the plate, but with double cover strips it will be necessary to guard against having the rivets too large. Mr. Browne, by allowing greater strength to the rivet section, has arrived at proportions of pitch somewhat different from those I have given. He leaves between the rivet holes 25 per cent. more metal than that due to equal strength of section. I am not prepared to indorse this; I think the difference in practice will not be so great. Mr. Wymer's paper (which appeared in our March number) and my own are directed against the too close riveting we find so common in double riveted boilers. We find it too close even on the principle of equal strength per square inch, but if there should be, as Mr. Browne has it, 25 per cent. more than that proportion, we must be right in trying to increase it up to at least that proportion. If, in the diagrams I have given, A C be made four times the plate, instead of five times, the result will correspond with Mr. Browne's proportions.

SCREW SMITH AND SCREW WIMSHURST.

"An inventor is * * * one of those inconveniences with which civilization is inevitably afflicted. * * * To reward an inventor is to commit an act of folly: * * * unless, indeed, as is not altogether impossible, a man who has a claim for something remains unrewarded, whilst others are rewarded. In such a case the inventor is punished, as he deserves; for he himself feels some of the mental anguish he has constantly and unaparingly inflicted on others."

—*Modern Philosophy.*

"DUKE. But, knave, if there be *two*! how then?

"FOOL. Why, marry, your honour, that is, your Worship, that is, your Grace's Highness's altitudeship,—have their costard knobs, yclept heads, knocked roundly well together, so that they both call out; and reward the mildest."—*Old Play.*

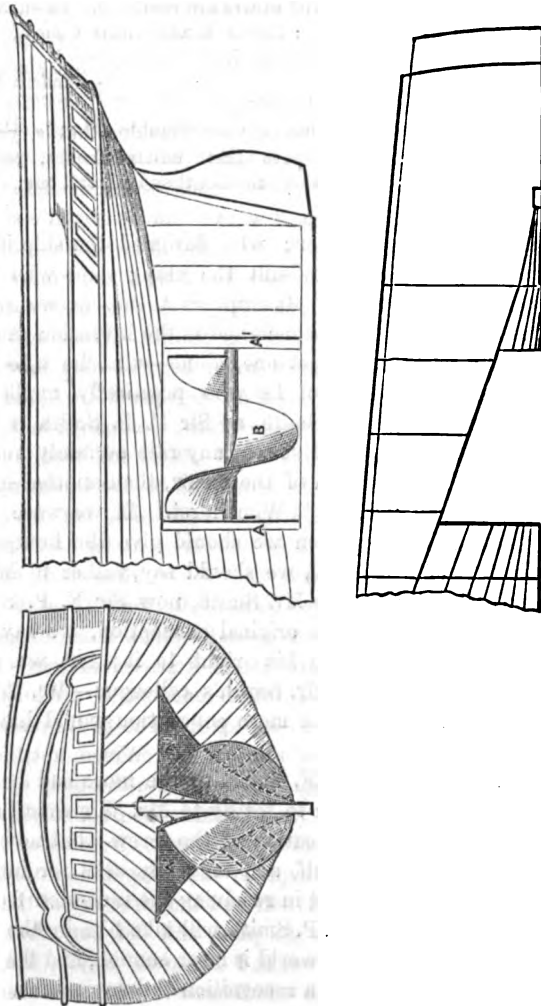
Who invented the screw propeller; who designed the ship in which it could be practically used; who built the ship; and who has been rewarded by the Government? It appears to us, as we shall show further on, that two persons were concerned in the invention and practical application of the screw, and that one, alone—viz., he who was concerned in the conception, and not he who practically applied it, has reaped the honour. "Screw" Smith, as Sir F. P. Smith is familiarly spoken of, had, as far as we can see, at any rate certainly not more to do with the practical introduction of the screw, than another gentleman, whom we will now call "Screw" Wimshurst. If we were beginning *de novo*, and were asked to whom we should give the honours for the practical application of the screw, we should say, rather to Mr. Wimshurst than to Mr. Smith; but as Mr. Smith, now Sir F. P. Smith, has obtained some distinction for his original conception, we say, let him enjoy it. We will not question his right to it; but we urge that justice ought also to be done to Mr. Smith's colleague—Mr. Wimshurst, without whose aid and energy the mere conception would have been of no practical value to the country.

We should have admired Sir F. P. Smith the more had he been one of the first to assert publicly and to testify to Mr. Wimshurst's share of the practical adaptation and application of the screw; but now that Mr. Wimshurst comes forward himself, and modestly asks for inquiry into his case—into the part he played in resolving the invention from theory to practice—we trust that Sir F. P. Smith will take him by the hand and corroborate his statements. The world is large enough, and the invention is important enough, to admit of a recognition to two persons.

We will endeavour to explain Mr. Wimshurst's position as he asserts it. We will begin with the men. Mr. Smith is said to have been in business, and his business is said to have been such as to require a

N N

FIG. 1.
SMITH'S Patent Screw, and Plans proposed for the Experimental Vessel
called the *Archimedes*, May, 1888.



knowledge of the properties of the soil, rather than of the performances and construction of ships. He, however, had made and tried small models. Mr. Wimshurst, on the other hand, was a practical man, and a shipbuilder of known position on the Thames. Mr. Smith possessed the invention, Mr. Wimshurst the practical knowledge and the influence, necessary to make the invention of use. Mr. Smith himself began the attempt at an application of the propeller, and of course failed. A vessel, 30 ft. long, had thus actually been built, and fitted with Mr. Smith's propeller, before Mr. Wimshurst took the matter up at all; for some gentlemen had subscribed a sum of money to test the merits of Mr. Smith's screw, and the committee appointed by those gentlemen condemned Mr. Smith's production, as shown in his 30 ft. vessel. That Mr. Smith failed, when alone and unaided, is proved by the fact that the money subscribed for the screw was devoted to another purpose, and went to build a paddle steamer.

Here we have then fact No. 1—viz., that Mr. Smith built the first screw boat, a boat 30 ft. long, and fact No. 2 that Mr. Smith's boat was a failure. This was in 1837. Fact No. 3 is the intervention of Mr. Wimshurst. This was in 1838. Through Mr. Wimshurst's position and known character as a practical man, he was able to give life to "The Ship Propeller Company," was the "first promoter," and one of the first, if not the very first, to put money into the Company; and it was only when and because and after he did so that others followed, and that the capital was raised. Mr. Smith was employed by the Company, and Mr. Wimshurst was engaged to build the *Archimedes*, not from his own designs and drawings, but from those prepared under the directions of Mr. Smith and the Company's surveyor. Everything went on with the *Archimedes* strictly according to the plans of Mr. Smith and the surveyor; the vessel was up in frame, and was actually planked as far as the place for the propeller, when an important incident arose as regards the hull—viz., no less an incident than the interference of Mr. Wimshurst with the designs of Mr. Smith and the surveyor. The 30 ft. vessel that Mr. Smith had built had turned out a failure. Mr. Wimshurst thought that this was because the screw was put too much into the body of the vessel, into a kind of well (it had a bulkhead before it and a smaller bulkhead behind it). According to Mr. Smith's plan, the *Archimedes* would also have had her screw similarly encumbered. (See illustration, Fig. 1.) Mr. Wimshurst and Mr. Smith differed, and the directors of the Company finally agreed with Mr. Wimshurst's plan, and did not agree with Mr. Smith's plan, and Mr. Wimshurst had his own way. He therefore at once did away with Mr. Smith's bulkheads, and introduced what he calls a "body post"—in reality he put the screw into the stern where the water could have free access to it, and where the water acted on by it could escape.

FIG. 2.

WILKINSON'S Patent Improvements, and his Screw, finally adopted by the Ship Propeller Company, 1888—9.

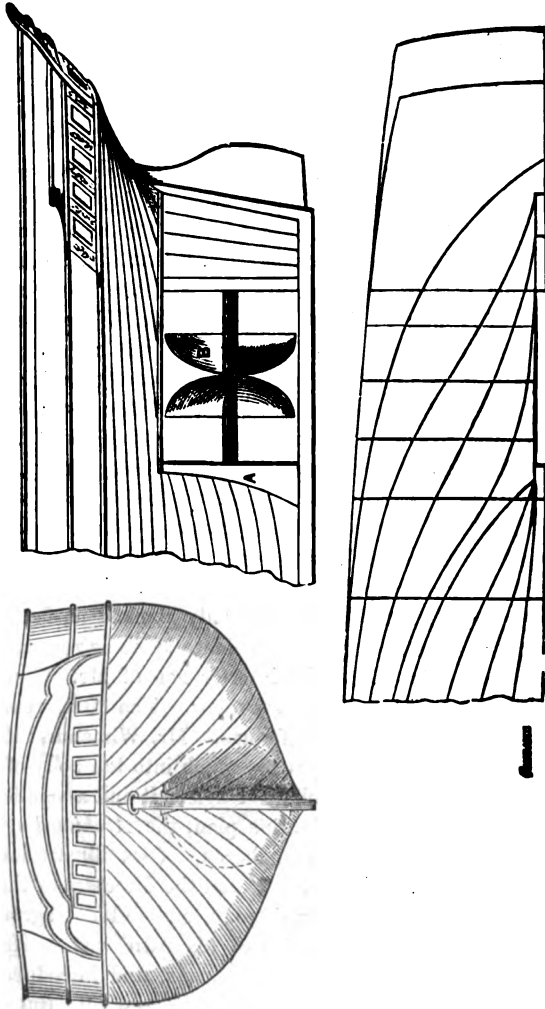


FIG. 8.
THE "NOVELTY."

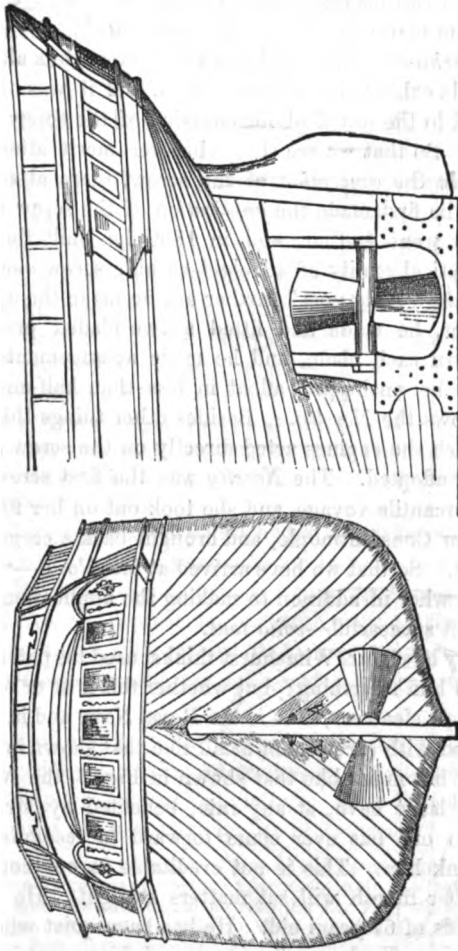


Fig. 2 shows how the *Archimedes* was finished as regards the hull, and how she was subsequently altered as regards the propeller. She was launched, and Mr. Wimshurst with his men and forges, kept on board during her trials, but it was found that the form of screw (see Fig. 1, p. 454) put into the ship by Mr. Smith's plan shook her too much; and here we arrive at fact No. 4—viz., Mr. Wimshurst's alteration of Mr. Smith's screw. Mr. Wimshurst interfered (again against Mr. Smith's wishes), and introduced a two-bladed propeller of one-half turn each blade (see Fig. 2, p. 488) in lieu of the screw shown in Fig. 1.

It was the *Archimedes* thus built, with her screw thus altered, that Mr. Smith afterwards exhibited round the coasts, and it was this *Archimedes* that contributed to the practical introduction of the screw into our Mercantile Marine. So that we see that whatever merit attaches to Screw Smith as regards the *conception* of the screw, more attaches to Screw Wimshurst, for he first made the *application* of the screw possible. But Mr. Wimshurst went further, and in 1839 he built the *Novelty*, and realised the practical reality of a freight-earning screw steamer. In this ship he moved the "body post" further aft, he made the aperture for the propeller shorter, he made and fitted a two-bladed propeller of one quarter of a turn each blade, and he made arrangements whereby the propeller could be unshipped afloat in less than half-an-hour. Fig. 3 (see p. 489) shows the *Novelty*. Besides other things this ship was the first ship in which the engines acted directly on the screw shaft, the plan now universally adopted. The *Novelty* was the first screw steamer that ever made a mercantile voyage, and she took out on her first voyage 420 tons of cargo to Constantinople, and brought back a cargo of fruit for a Liverpool house. So that we have arrived at fact No. 5—viz., that it was Mr. Wimshurst who, in addition to making the application of the screw possible, made it successful—*voilà tout*.

The Admiralty have, Mr. Wimshurst thinks, used his patented plans, and have never paid him a farthing; but whether this is so or not, one thing is certain, that screw steamers, both in the Royal Navy and in the Mercantile Marine, are fitted with screws, not at all like that shown in Fig. 1, Smith's original screw; but much like that shown in Fig. 3, the *Novelty's* screw. The country at large have, at any rate, benefited by Mr. Wimshurst's labours, and no one has ever come forward to recognise his claims, or even to thank him. This is not creditable to our country, and we hope that another month will set matters straight. He is still hearty, although upwards of 67 years old. He has been quiet when others have been demonstrative. He does not even now ask for *reward* without inquiry; but asks for inquiry. His modesty is still one of his characteristics.

Since writing the above, we have seen a letter from the Admiralty to Mr. Wimshurst's agent, in reply to a letter asking for inquiry to be

made into his claims, which informs him that, "My Lords cannot recognize any claim on the part of that gentleman to compensation in connection with the screw propeller." We never attempt to embarrass a public department in dealings with inventors, and our advice to Mr. Wimshurst is, to proceed on the grounds of his services to commerce, and to appeal to the country on account of his assistance to the Mercantile Marine. He need not fear the result. In appealing he will be ill-advised if he finds fault with the Admiralty or with Sir F. P. Smith. His own simple statements will enlist the sympathies of his fellow men.

CORRESPONDENCE.

LIGHTENING SHIPS OVER YENICALÉE BAR.

To the Editor of the Nautical Magazine.

SIR,—As I doubt not that the majority of our British shipowners are readers of the *Nautical*, I should feel obliged if you could spare a few columns for the insertion of the following remarks, based upon six years experience, and drawn up in the hope of serving a class who are much imposed upon, and whose benefits receive much alloy, owing to the persons employed by them:—

Non mihi si linguæ centum sint, oraque centum,
 Ferrea vox, omnes scelerum comprehendere formas
 * * * * * possim.

Let a few instances suffice.

The abuses which occur under this head are becoming annually more and more flagrant, and have already induced me to write to many shipowners on the subject. But it is a thankless task, writing to them individually; for, while some receive my representations with very gracious acknowledgment, there are others who receive them very ungraciously.

The evils so frequently represented as of constant occurrence are as follow:—

On the arrival of a ship in the Kertch roads, bound up the Azof, the master is besieged by a swarm of penniless adventurers, German and Maltese Jews, ship chandlers, and, latterly, Englishmen, who propose terms for lightening his ship over the bar of Yenicalée.*

* Of this legion there are only two whom I could conscientiously recommend, if consulted. One from many years experience, and the satisfaction he has generally given, and of whom I hear no complaints. One who protected British interests at a time when there was no protector, during the war, and who received from the British Government a handsome remuneration for his valuable services; who has also acted as Consul. The other a master mariner, trustworthy, to whom I am under much official obligation for services rendered to the Consulate, and who, although he does but little in the lightening line, is well able, from his experience and judgment, to advise those who think proper to consult him.

The arrangement commences with a "present," "commission," a "per-centage" (all of which terms are indiscriminately used for the same thing) to be allowed to the master,—

Ausi omnes immane nefas, ausoque potiti.

The Russian Steam Navigation Company alone resolutely persist in refusing any sort of gratification to the master, the consequence of which is that very few treat with that company.

He who does must necessarily be an honest man,—

"Rejecit alto dona nocentium,
Vultu."

When the present is agreed upon (sometimes as much as £20 in a contract of £60, £40 of which are *bonâ fide* paid by the master for lightening, and £20 retained for his amusements, while he produces to his owner a contract specifying £60 as agreed upon for lightening) the master is seldom in a hurry to finish unloading and reloading, as there are hotels in Kertch, the keepers of which bring over a band of musicians, singing men and singing women, especially the latter, every year for the amusement of masters, who, while they grudge paying a consular fee of 5s. for the Crown, for a protest, or other document, lavishly distribute bottles of champagne, and other delicacies, to these minstreling angels—women, and pay away their roubles as if they were coppers.

There is an old story of a shipowner finding fault with his captain for always charging hat-money in his accounts, till at length the captain, to please his owner, presented his accounts without the item of hat-money. When the owner expressed his satisfaction at this omission, the master replied, "You do not see it, but its there notwithstanding."

On the 30th October, 1867, the master of the _____ noted a protest at the Consulate. When the document was read over to him, he observed, "You have not mentioned the lighter which I ran foul of, and had to pay 500 roubles damages." I replied that I had not heard of the circumstance. He then related to me a very plausible story, after hearing which one stroke of my pen would have caused the owner to pay this small item. But I hesitated, and demanded proofs. He then left me, and in a short time returned, presenting me two documents, one acknowledging receipt of 500 roubles (signature illegible), the other a certificate from a British shipmaster, stating that he had surveyed the damages, and estimated them at 500 roubles.

I then required the presence of the parties who had signed these documents, in order that they might acknowledge their signatures in my presence. The master became very excited, stating that he did not know where to find the receiver of the 500 roubles, and that the English master had sailed; that he would have to lose the money out of his own pocket (which it proved afterwards he actually had done), and that it

ought to be inserted in the protest. As, however, I persisted in my refusal, he went away, and shortly after returned with the master, who he found had not yet sailed:

I desired the master who had signed the certificate to be seated, and then taking down a Bible from my book-shelf, I walked up to him, with the New Testament in my right hand, and the certificate in my left, and had no sooner commenced, "Will you swear to speak the truth," etc. when he pushed away the Testament from him, and, to his honour be it said, he replied, "No, sir, I can't do that; you must not ask me. We sometimes perform acts of complaisance towards our countrymen abroad, to get them out of trouble; but," etc.

I gave him a severe rebuke for having done so, whilst I could not help inwardly admiring the honest energy with which he recoiled from perjuring himself.

As to the loser of the 500 roubles,

"Procumbit humi Bos."

I terminated his protest without making any mention of the lighter; and it is well for the owner that I did so; for I afterwards learned that he really had fallen foul of a lighter—but it was a shore-going piratical lighter—who relieved him of his pocket-book, containing 500 roubles, with the loss of his watch and chain into the bargain.

I may here mention that when masters fall into such respectable society, it is well known that, in nine cases out of ten, they carry their pocket-book in their left breast coat-pocket. The process is simple. They are drugged, and when in a state of unconsciousness they are relieved of their pocket-book, and then very frequently put out of doors.

About the same time another master was robbed of 150 roubles in a similar way, and was advised to come to me to complain. But he had the good sense to keep away, choosing rather to lose his money, than to divulge his own shame: he stated that "he was ashamed to relate the circumstance." Such cases are of frequent occurrence, and when I complain to the police, they take no notice of it, but laugh.

In the autumn of 1871 a ship got on the breakwater, and the master sent me a note, requesting my assistance. I immediately despatched my private agent, a man of great experience, and trustworthy, who advised the master to make no engagement till the following morning, as the day was far advanced, and nothing could be done till the morrow, and there was a possibility that the ship might come off without assistance.

But as a general rule these men mistrust any advice given by a Consul, while they place implicit confidence in the opinions and counsels of the *οἱ πολλοί*.

He made an engagement by which he bound himself to pay £300, if the ship got off without damage. She did get off without damage, and

without assistance. The master most carefully avoided coming near me, but placed undivided confidence in his agent, and a sum of £260 was eventually paid for doing nothing. The ship sailed—the contractor received his money—the agent paid his debts—and the owner was satisfied with all, excepting myself, writing me a very rude letter, insinuating that if his agent had changed for the worse, since his arrival in Kertch, it must be owing to evil communications here (with the Consul *sub-intellecto*). He was informed in reply that “the seeds of evil communication must have been sown in England, he having stated that he had known him for several years.”

“A kick that scarce could move a horse,
Would kill a sound divine.”

But all shipowners are not of the latter stamp, and are unmoved, unless their pockets are touched.

The few cases above quoted may suffice to show what a thorough cleansing of the Augæan stables is needed; although the stables are less in fault than the animals that flock to them.

When so much is said, and justly said, about the deterioration of our mercantile seamen, I would suggest that the first step towards improvement is by embodying a better class of masters.

There are many old traders to these ports, men of high respectability, and who neither receive nor ask for presents, percentage, etc. There are Halletts and Glazebrooks, and many others, who really and conscientiously study the interests of their owners, and the land sharks beware of them. Among this class are also many belonging to a very worthy Quaker, who sends a little fleet of his ships here every year. The masters serving under him are so well chosen, that I do not remember an instance of bad conduct among any of them. Quiet, steady men, they generally command quiet and steady crews. Like master—like men. I have often heard it remarked, and am aware from personal knowledge, having the advantage of corresponding occasionally with this owner, that he is very particular in the choice of his men. Whereas in other ports, whence ships are sent up the Azof, a master will be seen one day knocking about the town, almost penniless, with a family in want, and the next day a captain, because he will go cheap. Let the masters have better wages, and let more recommendations be insisted on, and we should soon see a better sort of men, and the present system of abuses, not being sanctioned by them, would die a natural death.

The two or three pounds extra wages would save the owner from presents, percentage, or hat-money; and I would therefore conclude these remarks by saying with great earnestness and entreaties:—“Ship-owners! look out for your hat-money. You do not see it, but it is there

nevertheless." There to the detriment of the ships' profits—there to the detriment of the master himself—in health impaired—reputation damaged, and honesty forgotten.

There, too, as a baneful, pernicious influence over merchant seamen; and last, not least, there to the encouragement of dishonesty and immorality in a town where the "*Integer vitæ scelerisque purus*" is a *rara avis*, and less frequently met with than the black swan.

If I have thus been successful in calling the attention of shipowners to a great and growing evil, the task which gives me great anxiety, and in which I feel a deep interest, will be accomplished, and in the evening of my days I may be permitted to "rest, and be thankful."

PETER BARROW.

Kertch, 26th March, 1872.

FUTURE MERCHANT CAPTAINS.

SIR,—It may not be without utility to call attention, through the medium of your Magazine, to the present position of our Mercantile Marine.

England is a country assumed to be advancing in commerce, manufactures, mechanism, agriculture, and most other industries appertaining to civilized States, enjoying, withal, the most extensive Mercantile Marine in the world. No progress, however (but rather the reverse, as compared with some other nations), has been observable for years past in that particular branch to which her main efforts and chief attention have been heretofore directed, so far, at least, as regards the quality of shipmasters and seamen usually employed on board vessels of, and under, 350 tons burthen, whereas similar merchant ships of Sweden and Norway, Germany, and Italy are growing more and more into repute, and, although they can scarcely be said, as yet, to obtain a preference, they have become, nevertheless, active competitors in the carrying trade, bidding fair to take the lead at no distant period.

This subject, although of vital importance to our maritime standing, appears to be neglected or overlooked by shipowners the more directly interested, and, likewise by the administration on which devolves the duty to foster and maintain the mercantile welfare of the country. Blindly trusting to an acquired reputation, all parties seem content to let matters take their course.

Some experience in mercantile and shipping affairs, with many years observation, have, I regret to say, led me to the conclusion that our Mercantile Marine, instead of progressing, is gradually falling in arrear, and risks becoming reduced to a secondary position in less than another half-century, more particularly that portion accustomed to navi-

gate in the Baltic, Mediterranean, and Black Seas. The decadence is, I believe, mainly attributable to an absence with us of any adopted system of instruction for young men that purpose to embrace a nautical career; whereas, in almost every other State a regular course of study is necessary for the attainment of any notable position in maritime as well as in other professions.

No one at all conversant with this subject will deny that ship-masters of the above-mentioned countries are infinitely better informed, as a body, in matters of navigation and trade (the mere handling or manœuvring a ship excepted) than those usually placed in command of sailing vessels, above referred to, under the British flag, many of these latter, however well qualified to encounter perils of the sea, are often woefully incapable of properly conducting business when on shore, where they frequently seem to consider themselves free to indulge without restraint in all the license of disreputable excess. Coarse and overbearing in manner, they are rarely competent to express their ideas intelligibly on paper when necessity requires. The crews of such shipmasters are the most unruly in foreign ports, and careless of their duties, impatient of control, or indecorous in behaviour when on board, owing either to the men being badly selected, having acquired insubordinate habits from the irregular example of their chiefs, or to the laxity of discipline observed in their ships. An orderly, competent, well-conducted master, has rarely occasion to complain of the misdoings of men under his command.

Is it not expedient that the attention of the Board of Trade and of shipowners should be called to the foregoing subject, with a view to the promotion at the principal shipping ports of the United Kingdom, of nautical seminaries for the instruction of those who may contemplate entering on a seafaring life? An improved class of shipmasters would not fail to bring forward an amended order of seamen, and redeem to some extent the disfavour into which British shipping is drifting.

As an encouragement to more regular nautical instruction, commendatory certificates might be issued to such of the well-conducted as should satisfactorily pass examination on quitting an institution for nautical education.—Sir, yours faithfully,

OBSERVER.

London, April, 1872.

[In corroboration of our correspondent's views we would commend to the very serious attention of our readers a report made to the Board of Trade a few years ago on the comparative efficiency of the masters and crews; and of ships of British, and Norwegian, and Danish owners trading in the Baltic. The gentleman who made the report, visited the Baltic officially, and his report, which was presented to Parliament and is printed by Lloyds in a pamphlet form, would open the eyes

of Englishmen. As regards the training of officers for merchant ships, a few more establishments like the *Conway* and *Worcester*, and the advantages given by certificates from those ships, would, we think, go far towards remedying the evil. “Like master, like man” is probably more true of masters of ships and their crews, than of anyone else.—Ed.]

“ARIADNE’S” BOATS.

To the Editor of the Nautical Magazine.

SIR,—I have received the numbers of the *Nautical* for the present year. I further place myself before you unasked, hoping my intrusion will be forgiven, in a case where life may be at stake. I have H.M.S. *Ariadne’s* boat accident in my vision. I am writing without my host, but under strong conviction.

Why did the boat ship a wave? why did the boat turn turtle? are my postulates. I take it the boat was returning to the *Ariadne* off the wind, which possibly was acting on one of the boat’s quarters, giving the boat’s opposite bow an impetus to broach to the wind, which would expose the broadside of the boat to the topple of the sea, as well as disarrange the men on the boat’s thwarts. A crab caught with an oar in such stormy weather, and in such a position, would tend to capsize the boat without a second for consideration.

The question, how to be avoided? First, I do not say foremost, for I apprehend that was the cause why the boat came too quickly to the wind; the boat being trimmed by men too much by the bow for pulling off the wind. Had some of the men been made to sit in the stern-sheets of the boat, she would have been better trimmed for pulling before the wind; reasons: This would have given the rudder greater grip of the water, and the bow of the boat would have been more exposed for the action of the wind, leaving the boat less inclined to broach to and more ready to pay off. This action on the boat may be confirmed on a windy day in a small boat, by a man walking from the stern sheets of the boat to the bow, the boat will broach to. Try the walk in the boat the other way from stern to stern-sheets; if she does not pay off she will not broach too. My conviction is that the trim of the boat was the cause of the accident. In absence of other cause I state mine not dogmatically.

C. BLAKE.

[Captain Blake is well known to officers of ships trading to the East. Having spent a great part of a long life in practical seamanship, his opinions will be favourably received by our readers.—Ed.]

THE LORD OF MISRULE.

BY MAR TRAVERS.

FIVE hundred years ago, Sir Harry Furnival was reckoned a great man in Chester. He boasted all the qualifications essential to greatness, according to the measure of the times; to wit—an ample purse, an open hand, a hospitable well-spread board, the most spacious hall, tilt-yard, and pleasaunce of all the country side, the best wines of Burgundy and Rochester, the fashionable luxury of a Gascoigne cook, fine dogs, horses, and hawks, and last, not least, a dame and two fair daughters, who, for beauty and good manners, were not surpassed by any other noble house in that part of the country. In addition to these claims to distinction, Sir Harry was possessed of qualities that more truly, perhaps, gave him right to the grand old social name of gentleman; qualities that mark moral worth and win the tribute of good men's esteem. His charity was immense; his name was stainless; he was known to hold truth in reverence, to hate a lie, to abhor physical and moral cowardice, to fear God, to honour the King, to keep the laws. For these virtues he was beloved alike by the descendant of the Norman conqueror; by the common serf, whose ancestors had worn the iron collar, and by the lazy beggar who crawled daily to the castle gates.

"Away with you, ye motley herd," shouted the stout old noble, his stentorian tones cutting the keen atmosphere of the January day, from which dates the commencement of our story; "away with you," addressing the crowd of vagrants congregated round the outer entrance to the castle; "surely you don't expect your dinner before I've eaten my own? If such be your expectation, ye'll have to feed upon hunger another hour or two. There, be off with your fardels, and let a man get into his own dwelling!"

The shabby, greedy herd of all ages and both sexes, dispersed, grinning and chattering, to return directly the jovial nobleman had passed from sight, in order to await the provision of broken bread and meat that, sooner or later, they all knew, would be sent them from the servants' table.

Meanwhile, Sir Harry strode through the courtyard into the great hall, and took his place at the head of the board, whereon was steaming the enormous dish of salt fish, with which the repast commenced, bowing his salute to the assembled company.

The conversation adverted mainly to the approaching tournament, which, it was proclaimed, would take place during the coming May, by the King's command, and in which Sir Harry, encumbered with the

weight and laziness of years, declined taking any part personally. Nevertheless, he had long sought among his youthful friends for some one of them whom he could send into the lists at Smithfield to wear his good dame's favour, one who would represent him, not unworthily, in royal eyes.

"I've picked him out at last," he said, smiling round the board; "Yea, I've chosen him, and could bet any of you that he's a right courageous and winsome lad."

The ladies and gentlemen grouped around the long wooden table, cast inquisitive looks at each other.

"There's not a man among you will guess, letting alone the ladies," said Sir Harry, raising his voice, for even his was scarcely audible above the din of bawling attendants, and cooks, and snarling dogs; "and what's more, not one of you shall know. Master Digby's alone in the secret, and he's sworn not to divulge it."

Master Digby hearing his name pronounced, and concluding he had been called for, advanced with a loud "Ready, Sir," and stood beside his master's chair, in respectful silence.

He was a big, stalwart fellow, with a humorous face, and unpolished bearing; a plain out-spoken rough man, but withal a general favourite, and an old family appendage to boot. It was the fashion of that by-gone time, in high families, to elect for the Christmas season a leader of the sports, surnamed the Lord of Misrule, whose business it was to arrange the festivities each day, according to the best of his judgment. The office was usually allotted to a gentleman of the rank of squire, but such was the favour in which Digby was generally held, that the dignity had one year descended to him, and so well had he filled the post that he had been re-elected each successive Christmas, until the title and office of "Lord of Misrule" became unquestionably his.

"I'm talking," said Sir Harry, turning his face half-way towards his favourite domestic, "of next May's doings, Digby; and I'm warning the good youths to practise their tilting and wrestling with more than usual vigour, for you and I know of a knave who'll beat every one of them."

"That will he, Sir!" rejoined the Lord of Misrule, proud of his knowledge in the matter; "a better never held a spear, or wore a tabard; that I grant you. Not you, yourself, Sir Harry."

"The readiness of the wit, methinks, scarcely covereth the freedom of the tongue," murmured one of the guests to his neighbour, but taking care to make the murmur audible to the ears of his host: "We live truly in times of advance, when such pertness passeth unrebuked."

The host, disregarding the whisper of his aristocratic friend, replied in answer to Digby's eulogium, "Quite true. Chalk out his portrait for the ladies, my lad."

"Strong as a horse, and tall as a spire," graphically spoke Digby; "lithe and supple as an osier twig, your honours; as prone to seize an insult as flint is to strike fire, and as fair-looking as any man in the kingdom, letting him alone for gentleness to women."

"What's the foyle of his attire?" "His name?" "What countryman is he?" "Whence doth he come?" Questions such as these assailed the old man's ears from all quarters. He, significantly placing his finger to his nose, gave meagre answer:

"Don't ask me whence he cometh, nor his name, nor the cut of his garments, nor if he's this, or that, or t'other, for such is his business, and nought of mine. Let this suffice: he can close with the biggest; he knoweth how to shoot with the best. The sight of his cudgel would make his enemy tremble. Find out all else when he shows his bright face among you, noble sirs, this eventide."

At the close of his speech the outspoken Lord of Misrule retreated from the dais, and retired to the lower end of the hall, there adding his loud tones to the tumult of clamorous tongues, barking dogs, and chattering magpies.

"Why it must be Antæus himself, or my Lord Hercules," exclaimed a youth, whose cheeks were flushed with wine and indignation; "for surely no ordinary mortal would be matched against the whole batch of us. I am not afraid of him, forsooth! The gods have given me a fair share of bone and muscle. Sir Harry, I am ready for one to put the halter round the neck of his pride."

"We'll all meet in the tilt-yard to see you do it," sneered Lord Hugh, the hunch-backed Cræsus of the town. He it was who had rebuked the freedom of Digby's speech.

"Ah! it's not length of limb, nor heat of temper, will tie the victorious scarf round a man's arm," sighed another, himself being of a soft disposition, and middling stature, whereupon Matilda, Sir Harry's younger daughter, begged to be told who had called the brave unknown long of limb or hot of temper.

"I could wager you this trinket, that if one, he is the other, and most likely both," snapped her vis-à-vis, Lord Hugh, touching the table with the point of his delicate finger, on which a diamond gleamed.

"If the two be compatible, noble Sir, then methinks ye should be neither," retorted the girl, irritated out of the composure she usually maintained.

"For shame," cried Sir Harry, angrily. "Where has thy consideration flown to?"—and Matilda, with a little passionate tinge of extra colour in her cheeks; stammered a not very gracious apology. The deformed noble, whose intuitive refinement raised him above the coarseness of his time, returned graceful reply:—

"Your kind courtesy, fair lady, hath more than removed the pain inflicted by your words"—and he raised the drinking horn to his lips in token of peace.

"Bear ye that in mind," jested Sir Harry, "when ye are tripped up by my hero, or unhorsed at the coming tournament, my friends. I'll wager a silver spear not one of you will beat Harold, or Antæus, as you're pleased to call him, Sir Francis."

"Done!" exclaimed the jealous youth; and looking round the board, he called upon his cousin Lewisham to accept also the challenge against this famous wrestler. But Lewisham was too busy, masticating his dinner, to feel any pangs of mortified vanity. His elbows occupied the space of two people, his big head, almost on a level with his plate, nodded from side to side; his gaudy dress bore the stained tokens of an untidy gourmand, and keen-sighted, fastidious Hugh, could not refrain from giving verbal expression to his disgust:

"You keep the spear, Frank," he said, nodding towards the glutton, and give Lewisham the clasp-knife. "He'd, any day, change his tabard for a bib."

Feeling, intuitively, that the laugh was against him, Lewisham raised his head, and blinked foolishly at the company, whilst the hot colour, which ridicule rarely fails to excite, dyed his flabby, sensual face crimson. Sir Harry endeavoured to set his discomfited guest at ease. Rising from his seat, he seized his bow and quiver suspended from a nail in the wall, saying,

"Leaving bib and tabard alone," for he thoroughly despised his young friend's greedy propensities, "there's none of you will drive the arrow right through the bull's-eye before Lewisham himself. Let's have a shot at the target, boys."

In ready obedience to the old knight's bidding, each one of the male portion of the assembly rose from the table. In those days, fashionable people dined as early as eleven o'clock, and supped when the "beau monde" of to-day collect around their tables, in May Fair, for dinner. At the signal, given by the host for the general dispersion, the remains of the repast were finished by the servants, and generously distributed among the vagrants at the gates, whilst the company broke up into knots, these hurrying to the tilt-yard, or the archery-field, those to continue the favourite studies of the period, logic, alchemy, philosophy; others to discourse of the news gathered from couriers, from town, of the doings of the court, or the tournament to be held in Smithfield already spoken of. Young people found then, as now, opportune moments wherein to make love and exchange whispers, and several of Sir Harry's friends lingered long in stringing their bows to string fine words and compliments together. One by one they

cleared the hall of their presence, following the knightly host to the archery field. First, hot Sir Francis, with the open manly face and athletic form; in his steps, with gait slouching and slow, trod his cousin, the greedy Lewisham, bearing the index to his passion for the good things of this world less in his stained doublet than in his inflated purple cheeks; him gradually the remaining many followed; lastly, the delicate Hugh withdrew, wending his way to the privacy of his own apartment, where he passed the time chiefly in the pursuit of alchemy, or in the study of logic and philosophy. Heir to immense wealth, sprung of the old Norman noblesse, descendant of the nobles who had transferred to Britain the language and customs of Northern France, who had trodden, in the conqueror's wake, alike on the liberties of Saxon chief and churl, this noble was at once the greatest and the most despised of Sir Harry's guests. Educated at Oxford, pupil of the law by his own free will, sensitive to a degree, ever conscious of the overwhelming bitterness of his deformity, he, of all that great household, the most accomplished gentleman, was the most unfriended man. His misfortune causing him to shrink from the society of those whose delights were mainly the sports in which he was debarred participation, rendered it impossible for his better qualities to be known; that sensitive nature which made him fastidious, superior to the gross coarseness of his comrades, obtained for him the appellation of woman-like, an appellation negated by the strong and beautiful features of his intellectual face.

No sooner had the gentleman departed, than Matilda signalled honest Digby into a corner, and smiled up into his rubicund countenance with a half-leer, that the old servant well read as prelude to a request.

"Now, I am going to ask thee something, Master Digby," she said, turning upon him the light of her blue eyes, "and bear in mind that I will take for reply nought but complaisance on thy part. Who is this wrestler my father speaketh of, of whom he boasteth so largely?"

"Why, how can I know?" he answered evasively, with a clumsy assumption of ignorance. Matilda stamped her foot and bit her little red lips.

"His name then," she exclaimed. This was a command, imperiously uttered; but changing her tactics with the passing moments, she said, gently and imploringly, laying her hand on his sleeve, "If ye will but acquaint me with his story, ye shall have my pet falcon, a better was ne'er leashed to a lady's wrist."

"Nay, nay," spoke he stoutly. "I was never bribed yet, my lady, and I'll bite at no bait now. His name is Harold Grey."

"Is he squire or knight? What title hath he?"

"He is Harold Grey and nought else. A truth-speaking, brave lad, with little fortune but his strong arms, and no pedigree to vaunt of—a

lad who fears none save Almighty God and his conscience. But this I will say, a nobler never crossed the Humber."

"The Humber!" echoed the girl, shrugging her shoulders; "he cometh from beyond the Humber! Then spare thy trouble, old lord, he's a big-boned, broad-tongued Yorkshireman, with a heavy face and an unintelligible jargon. Nay, indeed, my hawk may stay on its perch yet awhile." And wheeling round, she made a mock obeisance, which he returned in grave simplicity, regarding with admiring eyes the light figure robed in its trailing, fur-bordered, garments, until it vanished through the doorway.

Very different in character was the noble's elder daughter, Elizabeth Furnival, who was reputed throughout the country a prodigy of learning and good sense. She put aside, as far as the gaudy times would allow, all gaiety of dress and levity of spirit, carrying with her in her daily life, the gravity and decorum of the convent in which she had been educated. She read Ovid and Virgil with ease, she spoke French gracefully, she had illuminated books. She was familiar with the metrical romances—fashionable luxuries in polite circles. Her mind was stored with quotations from the tales of Chaucer. The writings of Bede the Venerable, were known to her. She digested with extraordinary relish the satirical vision of Piers Plowman. Her name and face were associated with kind deeds nobly and unselfishly executed, and were blessed by the poor and ignorant of the town, whenever by chance the former was mentioned or the latter seen. In heart, and half avowedly, she was a Lollard, and cherished in secret a copy of Wykcliffe's Bible; a fact guessed at only by her indulgent father, who, indifferent to the matter as touching her faith, yet somewhat anxiously brooded on the danger she personally incurred. The more general female occupation, of jelly-making, or tapestry work, she left to her sister, whose chief studies were those of the paste-board and the mirror, and who, though scarcely able to indite a letter, excelled in the devising of a subtlety* or the arrangement of costume.

"Pick me out my highest head-dress, this eventide, Wynfred," Matilda said to the maid who was dressing her hair for supper; "that which hath the blue streamers, mind me."

"Ah, mistress," returned the maid; jestingly, yet not without a deferential tone; for offending Matilda was like treading on hot ashes; "Lord Hugh de Courtenaye and Sir Francis Ford have both a taste for blue ribbons, I've heard say."

"It is like their rudeness to remark it," retorted Matilda, who despised

* A centre dish, served on grand occasions, in form either of a cupid or a castle, composed usually of jelly, ornamented with sweets.

the attention these gentlemen paid her; "and it ill-behoveth thee, Wynfred, to repeat what thou hast heard."

The maid, repressing a smile, humbly declared she had intended no offence.

"I dare say not, and none hath been given. None the less, it were an excellent thing if thou couldst learn to bridle thy tongue," admonished the woman, who never bridled her own; and forthwith, with that remarkable inconsistency not uncommon to women, she commenced a long gossip, now of this knight and that squire, now of this dame and that damsel, whilst Wynfred laced her bodice, and bound up her long hair.

The toilet completed, Matilda surveyed her face in the silver-framed mirror dangling from her girdle, and propounded the question:

"Do I look quite fashionable and comely?"

"At the very tip-top of the fashion," replied Wynfred; "I assure you, you look charmingly."

"Yea," she said, "it's all very fine for my sister Elizabeth to vaunt her book-knowledge, and affect ill-will towards cavaliers, and the foyle of her attire; but she'd give all her learning, look ye, for my face."

"I am sure of it," acquiesced the waiting maid.

On entering the hall, her head thrown back, her foot in its dainty slipper, purposely displayed, her satin robe caught up with one delicate hand above the ankle, Sir Harry's younger daughter attracted the fullest admiration she expected. Every knight there followed with his eye the blue dress, trimmed with fur, as, falling in rich folds closely around the elegant figure, it swept from the doorway to the dais, working havoc among the rushes which had strewn the boards for months; and a murmur of approbation ran through the assembly. Elizabeth, her book resting on her knees, drew back her plainer skirts to let her sister pass, and looked from her serious eyes a gentle reproof, called forth by Matilda's conscious attitude, and the more than ordinary magnificence of her attire.

Tallest among the gentlemen stood Harold Grey, the bronzed-faced, keen-eyed, yellow-haired lad, from beyond the Humber, sustaining with unbroken equanimity a perfect volley of gibes and jokes, levelled at him from all quarters.

Lord Hugh, simply clad in black velvet, but wearing shoes whose extravagant points were fastened to his knees by chains of massive gold, surveyed him with critical glance, a half sneer curling his lip the while. The Lord of Misrule, pacing the hall, continually stopping at the foot of the dais, grinned with satisfaction as he beheld the envy evinced towards the stalwart young stranger, who was to wear the Lady Furnival's favour at the coming tournament. The short one stood on tip-toe, the

thin puffed himself out, the strong made loud boast of his strength, and volunteered at once to take up the cudgels.

As the days passed by, they who had slighted and ridiculed Harold Grey, on his coming, very soon, through prudential motives, forebore to do so. The young northman made them feel that his arm was strong, his aim true, his heart honourable, as Sir Harry had foretold. Sir Francis was beaten at the ring, and in the cudgel play, and thrown in the wrestling match. Lewisham's success at archery found a hand yet steadier to draw the white-osier bow, an eye that took unerring aim to the bull's-eye. Lord Hugh's cutting sarcasms were repelled with considerate endurance. What tho' this stranger's hands were rougher than their own, and sparkled with no sheen of rare stones, what tho' his habit were of coarser texture and plainer hue, his speech ungraced by the current Normanism, they yet found themselves compelled to give way to the nobility of a nature that met everything honestly and bravely. It was not long ere mistress Matilda discovered that Harold became dearer to her than her fine attire; that she cared more to look on him than on the mirrored reflection of her own fair face. She secured at the board the seat next to him, not without a sharp tussle with her lady mother, who remonstrated, on the score that the new comer's want of rank forbade him a seat above the large silver-salt among those of noble birth; she made him carry for her her missal to the abbey; she praised extravagantly his riding, his north-country ballads, his skill as a sportsman, which would certainly, she said, obtain for him a seat in the Parliament, such being considered, in those days, almost a necessary qualification for a representative of the people; but all her arts were of no avail, her love was not returned. The bitter mortification awoke the ignoble passions of her nature; her pride was stung doubly, in so far, that she had lost her aim, and that her endeavours to secure the affection of Harold had been palpable to all, laying her open to the jest and sarcasm of the upper, and the slander of the lower, hall. Instead of loving, she began to hate. She crept about the house with unnaturally glistening eyes, her face pale, ever keeping her ears open to catch something concerning Harold, that she might use to his discredit. The whole house was astir, making ready for the journey from Chester to London. The tapestry was taken down from the walls, the goods and chattels were packed up for removal to Sir Furnival's Inn, in Holborn, and in the general bustle and confusion, Matilda's white cheeks and excited manner passed unnoticed. And to all but her, another little drama, being played out in secret, passed also unobserved. January had melted into April, ere Matilda acknowledged to herself that the love she had strained every nerve to win, was given to her sister. From the second day of the northman's entrance among them, he, and the mistress

Elizabeth, had established in unison a bond of friendship, taking root from the fact that they both belonged, in heart, to the new religion; a fact revealed by chance. As he wandered over the pleasaunce one bright morning, he passed her, sitting on the gnarled roots of an old ash, wrapped in a cloak of dark sable, deeply absorbed in the perusal of a large book spread open upon her knees. A sudden impulse prompted him to enquire the title of the book, a question dictated less by curiosity than by a wish to exchange a few words with the lady whose grave and gentle face had for him a charm he missed in the countenances of the other female inmates of the castle.

"In truth, ye have asked that which it is difficult to answer, Sir," she said, and tendered him the volume, which he took into his hands. It was a copy of Wyklyffe's translation of the Bible.

He returned it, saying:

"You are well acquainted with those pages?—I, equally with yourself."

In her surprise she let the book fall, and asked, colouring to the roots of her hair, and hesitating slightly:

"Will ye tell me, Sir, if ye, too, are of the Lollards?"

"If a belief in the doctrine that book teacheth, a love of its teaching, and, above all, a free faith, make me such," he answered quietly, "why, then I confess that I am."

Elizabeth looked up into the eyes bent upon her face with a searching gaze, and her own drooped with the intuitive conviction that, henceforth, in her affections, the English Bible would hold a secondary place.

"Ye must be careful," she said, with ill-concealed anxiety; "ye must avow not too openly these opinions which it is so dangerous to entertain. Ah, Master Harold, I have heard of strange and right sad cruelties practised of late against the——"

"The Lollards," he returned, catching up her hesitating words, his lips wreathing themselves into a proud, but sad smile. "I know it," he said, "but I do not fear it. I can front danger without shrinking, if needs be; but I do not seek it, mind ye. A truly brave man should yield truth to nought; if needful, I can yield myself to truth."

And he bowed deferentially, and left her. It follows, as a natural consequence, that the two who stood alone in the new faith, of all the household, sharing a common danger, should find comfort and pleasure in each other's society—should like to peruse together the story of that Great Life, which had been given to the nation in the vulgar tongue, by the heroic parson of Lutterworth—should prefer the quiet banks of the Dee to the turbulence of the tilt-yard, or the clamour of the public hall; should, little by little, be drawn yet closer in heart and interest; should, finally, make mutual confession of the passion that had surprised both, in

the early pride of man and womanhood; should exchange rings, and plight troths where the pleasaunce joined the river, as young lovers do still probably exchange rings and plight troths, by the old Cheshire river. The course of true love never did run smooth, and fortune could not permit this pair of true lovers to escape without their due share of romantic suffering. Chance, or mischance, guided Sir Hugh's feet to the boundary of the pleasaunce, one evening, at the time when the sun was sinking its last rays into the gold-illuminated river, and showed him a picture he was little prepared to behold. Before him sat Mistress Elizabeth and Harold Grey, forming a group that was beautiful to look upon; she, pale, calm, with smoothly drawn-back hair; her dress a simple brown, with a white kerchief pinned across the breast, in which were loosely placed a few pink rosebuds; he, fresh-coloured, his features strongly defined, his red-gold hair mingling with his tawny beard.

Lord Hugh was noble enough to have crushed down the pang he felt, the bitter consciousness that the life-torture imposed on him with birth, forbade to him the probability of ever sharing a scene like this; but his keen sight showed him one fact which his intellect could not pardon, which smote the chord of prejudice. He noted their chained hands formed a reading-desk for a book, which he immediately recognised—a book which above all others he hated—Wycliffe's translation of the Bible. He took off his plumed cap, in mock homage, and the shadow of it swept across the open page, causing both readers instantaneously to look up. Instantaneously, too, they rose and confronted him. The natural blush dyed crimson Elizabeth's cheeks, but the blush was not one of shame; the glow heating Harold's bronzed brow was not of fear. He had surprised them; their heart's secret was in his possession, nay more, their very safety almost was in his keeping; erect, they stood before him; they attempted no subterfuge. The lady first spoke.

"Lord de Courtenaye," she said, proudly, "Ye know how matters stand! Whether ye will acquaint others with your knowledge thereof, remaineth with your honour. We petition no secresey."

A sinister smile parted the hunchback's lips; he pointed scornfully his jewelled finger to the book in Harold's hand.

"And that?" he said: "ye petition no secresey for that, fair lady? Ye care not if it be spread abroad that this gentleman is a *Lollard*, and practices his faith, forsooth, in this fashion!"

The shaft hit home. What woman who strongly loves would expose willingly to danger the man who is dearer to her than all else upon the earth? Elizabeth answered, how plainly! by drawing nearer to Harold's side, shivering slightly. The northman replied for her; drawing his figure erect, so that he towered above the dwarfed and arrogant noble, but speaking gently for her sake, he said:—

"No; ye shall not intimidate by threat or insult. Ye are at liberty, mark, to expose me, if ye will. For myself, I fear nought. Only for her;" he laid his strong hand on her girlish shoulder, and his lip momentarily quivered; "forget not the courtesy of a knight's estate. For me," he drew his hand back, "I have never shrunk from the hardships attending the religion of a Lollard, nor the forbearance that it teacheth me."

"I honour the doctrine," spoke Lord Hugh, satirically raising for the second time his feathered cap; "I render it all due homage and veneration. We had best all turn Lollards. We had best all become disciples of that goodly faith which seeth no deceit in clandestine intercourse, no dishonour in abducting the affections of a noble lady; abusing with base-born ignorance and most consummate treachery the hospitality of her father's roof."

Harold, his eyes flashing, advanced a step, and laid his hand on the hunchback's shoulder, with a gripe that would have caused a stronger man to wince.

"Ye charge me with want of honour," he said passionately; "yea, ye rebuke me with a treble insult. Ye shall retract your words, my lord, or by heaven, my sword's point shall pin the lie to your throat." The noble, who was not wanting in personal courage, neither shrank from the iron grasp, nor cried out with the pain it inflicted, but a slight contraction of the brows recalled to Harold's mind the feebleness of his bitter-tongued, acute antagonist, whose insults deformity forbade him to avenge.

"Be thankful," he said, quietly, "that nature hath made you what ye are, and essay to be a little more careful whom ye select as the butt of your ill-timed ribaldry."

With which pointed speech he strode into a bye-path, his breast heaving with the smart of wounded pride and indignant anger. Sir Hugh, glancing at Elizabeth, who stood silent and sad, following Harold with her eyes, unconsciously folding her hands across the rose-buds he had gathered her, turned, and went his way to the tilt-yard. The game going on within the broad court was the favourite riding at the ring.

"Hold!" he shouted. "Oyez! This is to proclaim that I have news, comrades, wherewith your ears will tingle."

Immediately the circle broke, and the whole band surrounded him, some in the saddle, others out, all talking at once, save the grey-haired Digby, who remained at his post, in the expectation that the versatile crowd would presently recontinue their interrupted amusement. Surely, it must be something unusual, indeed, which had brought the dainty, sport-hating Croesus within the precincts of the

tilt-yard. The idle young nobles, active and strong, raised a momentary shout when the unlooked-for presence thus attracted their attention.

"Why, how now, my lord," exclaimed Sir Francis, walking his handsome chestnut up to the intruder; "Out with the news, noble Sir. See ye, we have left our pastime to listen to the gossip which hath brought you hither."

"Take care!" screamed Lewisham, who could be agile enough when his plate was not before him; "Our friend yonder would rather ye'd ride over him than soil his gold tissue with the dust of your horse's hoofs!"

"Take my spear?" joked a third; "Verily I spare it right merrily, and since ye have no spurs to your buskins, why Frank there will prick your horse on with his winning spike."

"There's many a cudgel to be had, if maybe such be your phantasy," called out another from amidst the crowd.

Hugh bore the jokes with moderate good humour for a time, and then essayed to check them with an imperious gesture of his hand.

"Silence!" he shouted, peremptorily; "What a pack of wasps ye are! Listen, I have a truth to tell. We have a Lollard among us."

Many, on hearing this, muttered wrathfully, and drew yet nearer to the bearer of the unwelcome news; others turned away with a disappointed—"What of that?" whilst Hugh continued noting the expression on every face.

"What of it?" a smile curled the corners of his firm mouth. "Ye will think more gravely of it anon, I reckon. Care ye not to hear—doth it not touch your sensibility—that a low-born, deceitful Wykliffite hath of late, yea, and in the midst of us, worked himself by stealth into the favour of the noble Lady Elizabeth, throwing dust into our eyes by the blinding assumption of humility and cheating us with the smoothness of his dastard tongue."

"Who is it?" "His name?" rang simultaneously from all quarters.

"Who is it, ye demand?" reiterated Hugh; then, giving slow emphatic answer—"Hark ye, my most noble sirs, he is a fine fellow, a right honest and warlike fellow—a man who droppeth good words in lieu of good coins—one who discardeth the niceties of gentility, and scorneth to take note of apparel or the semblance of fair looks; one whose smallest wink hath been these three months almost law among you in tilt-yard and in hall—Harold Grey."

"Explain," they cried in chorus, and the old Lord of Misrule drew nigh, a dusky red heightening the colour on his cheeks.

"There is, in faith, but little to tell," continued de Courtenaye. "I confirmed my suspicions by crossing him to-day without will of mine own

part, that I assure ye. I found him well near lolling in my fair lady's lap, a Bible atween the two, but for the sight of which I would have gone my way and taken no heed thereof, such being no matter wherein I might presume to meddle. But so was my temper inflamed, that I came straight hither, having charged him with his baseness, to take council with you all, how best to acquaint our host, so that he may be justly driven hence. Truly, a 'noisome weed,' this, who cometh among us as Sir Harry's chosen knight, to bear our good lady's favour in the lists; a false pretence, under which he seeketh to win a heavy purse to carry in his unjewelled pouch, and make converts to his faith."

A sudden burst of wrath from old Digby startled those who were intently listening; he strode forward with outstretched arm, his clumsy shoes rattling on the paved court; a torrent of abuse poured from his tongue; he seized the collar of Lord Hugh's cloak, and shook him, till between white lips, he panted for breath—then flung him tottering backwards, a glow on his rough face, a fierce hot light gleaming in his eyes, as strange as it was unaccountable.

"Go," he thundered, for the moment the haughtiest and most arrogant of all present, "and spread the same scandal, and ye shall have for it the same reward, yea, though ye carried the weight of the treasury in your purse, and a kingdom on your back!"

A feather falling would have been audible in the tilt-yard, so great and universal the silence following this unlooked-for outbreak. Dumb consternation showed itself in every face. The insult was enormous, the affront unpardonable. A menial had maltreated a lord, and that lord was the most vindictive, the most powerful noble in the county; he was also a guest of the house within whose walls the inexcusable outrage had been offered, an outrage, the gravity of which was doubled by the publicity with which it was attended. The Lord of Misrule and Hugh de Courtenaye faced each other. The latter straightened his ruffled garments, and smoothed his crushed lace, maintaining,—though the white drops of visible indignation beaded his transparent brow,—his undisturbed composure thro' very scorn of the low birth of his formidable antagonist. He looked straight into the servant's eyes, and showing his glittering teeth, gleaming white between his pale, parted lips, he said distinctly:

"Thou shouldst have counted the worth of thy post and of thy fair name, Master Lord of Misrule, ere thou shew'dst the strength of thy arm," with which he haughtily quitted the tilt-yard.

The old man, with an awkward assumption of indifference, resumed his occupation of fixing the ring into the board, and round him crowded the young riders, like a flock of vultures that had unexpectedly found a carcass to feed upon.

“What didst thou do it for?” they clamoured. “Thou must have taken leave of thy senses to affront Lord Hugh de Courtenaye.”

“Nay,” he answered slowly; “sense and I have not parted company yet.” Then he muttered low, “I had provocation enow, the good God knoweth.”

(*To be continued.*)

RULE OF THE ROAD AT SEA.

ON Monday, the 6th May, Mr. William Stirling Lacon, at the United Service Institution, delivered an address, which was advertised as a discourse on the Steering and Sailing Rules. Mr. Lacon is influenced and impelled by a noble spirit of philanthropy, and his intentions command the respect of mankind. That his information is imperfect, and that his views are wrong, is his misfortune, and not his fault. After ascertaining the feeling of the meeting, and after one or two practical men had expressed an opinion favourable to the existing Rule, and Captain Colomb, R.N., had made a rough diagram which at once condemned one of Mr. Lacon's rules, Mr. Lacon acted wisely when he stated that he did not press his rules, but advocated inquiry generally. On Tuesday, the 7th May, we listened to the debate in Parliament, when Sir J. D. Hay adverted to Mr. Lacon's efforts. In fact, Sir J. D. Hay's rules are identical with Mr. Lacon's rules. The result—after an able speech from Mr. Chichester Fortescue, and after valuable testimony to the present rules from every member who spoke (except Mr. Bentinck)—was a crushing defeat of Mr. Lacon and Sir J. D. Hay. The House of Commons dismissed the subject without even the dignity of a division. Our readers—and our readers are practical men—will sympathise with Mr. Lacon and Sir J. D. Hay, but will none the less feel immense satisfaction and relief at the result of the debate. We reprint the most important speeches of the debate in the House of Commons:—

Sir J. Hay called attention to the numerous collisions at sea, and the consequent loss of life which had occurred of late. The increasing speed of merchant vessels added considerably to the risk, but he thought he should be able to show that the rules at present in existence were inefficient, and that a Select Committee to inquire into the subject was necessary to see in what respect they could with advantage be modified. * * * The rules of the Board of Trade required that there should be no change of course until there was a risk of collision *; but he maintained that a

* The hon. member is inaccurate in this expression. The rules do not, as he appears to suppose, require no change of course *until* there is risk of collision; but they do not expressly require a change “unless” there is risk of collision. The difference between “unless” and “until” is important.

vessel ought to take its right side of the road long before any such risk was incurred. Believing that the present regulations were fraught with danger to our vessels and to human life, he begged to move that a Select Committee be appointed to inquire whether the present steering and sailing rules could not be modified so as to reduce the present risk to life and property at sea.

Mr. Cave could assure his hon. and gallant friend that the rules were not departmental ones. They were the result of considerable discussion between the Admiralty and the Board of Trade and the Trinity House, as representing the Mercantile Marine. Foreign Governments took some time in considering the question, and the French Government suggested alterations, some of which were adopted, but in the end the rules and explanations met with the general concurrence of the Mercantile Marine and foreign Governments. He was at the Board of Trade at the time, and knew that the whole credit of explaining the rules and making them clear was due to Mr. Gray, an able officer of the Board of Trade, who turned the rules into verse—he could hardly call it poetry—which had been translated into almost every Continental language. The question of collisions was a most difficult one—something, indeed, like the warranty of a horse, where there was hard swearing on both sides, and the truth could scarcely be ascertained. The frequency of collision was attributed by some to an unfortunately increasing want of discipline in the merchant service, and to the difficulty of making sailors obey rules perfectly and promptly. When at the Board of Trade, on this question being frequently brought forward by Mr. Holland, he objected to any disparagement of the rules, and attributed accidents to disregard of them rather than the reverse. The decisions of Courts had since thrown additional difficulties in the way, it being impossible to know whether those who obeyed the rules would be sustained by the Courts or not, *but he should still resist any motion for a repeal or modification of the regulations.* They had, however, been, to a certain extent, discredited, he thought unjustly, and an inquiry could do no harm, while it might do good. If it confirmed the rules, *as he believed would be the case,* the Courts would, no doubt, harmonise their decisions thereto; whereas, if alterations were shown to be necessary, the sooner they were settled the better. He hoped, therefore, the Government would accede to the motion, but if they did not he should be obliged to vote for it.

Mr. Chichester Fortescue agreed with his right hon. friend as to Mr. Gray's services in this matter. It must not be supposed, however, that the rules rested merely on his authority, for they were settled in 1862 after consultation between the departments interested in the question, and down to the last few months had increasingly received the adhesion

of all maritime countries. He was surprised, therefore, that his right hon. friend should support an inquiry, for, though Parliamentary discussions kept departments up to their work, an inquiry ought not to be instituted in the absence of any *primâ facie* grounds for it. The additional rule passed four years ago had gone some way, at least, towards meeting the views and fears of the hon. and gallant gentleman. He was informed that the increase in the number of collisions was in a large degree owing to the great increase of voyages, and that there had been no increased collisions out of proportion to the increase of voyages. To-day the secretary of Lloyd's Association absolutely denied the statement that the collisions had increased beyond that proportion, or that the Rule of the Road had anything to do with the increase of collisions. It was not for him (Mr. Chichester Fortescue) to say what was the cause of these unfortunate collisions. Many causes were alleged, one of them being that the intense degree of competition which now prevailed, and which was greater than ever was known before, led to greater hurry, risk, and recklessness than ever happened previously. But, whatever might be the cause of these collisions, his hon. and gallant friend *did not move for an inquiry into the cause of collisions*; he proposed an inquiry whether the *Rule of the Road at Sea could not be amended*. He (Mr. Chichester Fortescue) contended that it was not expedient at present to re-open the whole question of the Rule of the Road at Sea. That Rule had been adopted by every Maritime Power in the world of the slightest importance. His hon. and gallant friend desired to detract from the authority of these rules by telling the House there had been differences between the Admiralty and the Board of Trade with respect to the additional rules made four years ago. He (Mr. Chichester Fortescue) admitted that there had been a certain amount of difference between the Admiralty and the Board of Trade during discussion, but that difference disappeared long before the rules were settled, and the additional rules were as much a part of the law of the land as the original rule itself. Two years ago, when his distinguished predecessor at the Board of Trade—namely, the right hon. gentleman the member for Birmingham was in office, he felt it his duty most steadily to oppose *not only any alteration of these rules, but any such Parliamentary inquiry as would re-open the whole subject*. His right hon. friend said he thought there would be every disadvantage in appointing a committee to inquire into a matter which all Maritime nations believed had been satisfactorily settled. Everything that had happened since had confirmed the view which his right hon. friend then took. His hon. and gallant friend said the two additional rules had not been assented to by other parties. In that he believed his hon. and gallant friend was entirely mistaken. In papers which he had just laid on the table of the House it would be seen that last year the German

Empire, by an ordinance adopted the whole of our rules for preventing collisions at sea, including these two additional rules. All the Maritime nations in the world would be surprised if, after a solemn inquiry, Parliament abrogated rules which they had adopted, with which they were satisfied, and with respect to which they had made no complaint. Nothing, indeed, would surprise them more than to find that the Parliament of England had come to the conclusion that the subject was beset with doubts and difficulties, and that the rules were capable of serious change and improvement. Of course he did not mean to deny that any particular set of rules might in some respects be improved, but at the same time he maintained that it would be most unwise to unsettle rules which had been adopted by all Maritime countries for the sake of the slight improvements that had been indicated by the proposer and seconder of the motion. The opinions of gentlemen in this country who had a right to be heard on the subject were adverse to the proposed inquiry. The papers which would be laid before the House in the course of a few days showed that Lloyd's Salvage Association had strongly expressed an opinion in favour of the existing regulations, as had also the Irish Steampacket Company, and Mr. Gray Hill, the secretary of the Liverpool Steamship Owners' Association. That very day a gentleman of high authority on a matter of this kind, Mr. Harper, the secretary of Lloyd's Salvage Association, had called upon him and expressed an earnest hope that he would not agree to the appointment of the committee proposed by the hon. and gallant baronet. Mr. Harper stated his belief that the rules were for all practical purposes complete, and that even if some slight improvements might be made in them, frightful danger would arise from introducing uncertainty and confusion as to the Rule of the Road at Sea into the minds of the seafaring population, who had to act upon that rule under the most critical circumstances. Mr. Harper concluded by saying that his opinion was shared by the fifty or sixty nautical men connected either with the Royal Navy or the Mercantile Marine who were officers of the Association. With all these facts before him, it was of course impossible for him to advise the House to sanction the proposed inquiry.

Sir J. Hay said that as the Government had not expressed any intention to institute an inquiry, he must ask the opinion of the House upon his motion.

The motion was then negatived without a division.

The *Times* has since taken up the subject of collisions, and in the money article of 16th May, inserted a statement made on the authority of Mr. Henry Jeula, the Secretary to the Statistical Committee of Lloyds. Mr. Jeula's figures are compiled from data furnished by the committee of Lloyds.

The *Times* says that the figures published relate to the "alarming increase of cases of collision," and Mr. Jeula's figures are supposed to prove this alarming increase. These figures are at first sight fearful to contemplate, but on investigation they are found to prove nothing, and for this reason—viz., that Mr. Jeula compares figures that have no bearing on each other, and no bearing on the question at issue. He professes to compare tonnage of ships with collisions, but the increase of tonnage he gives is not the increase in the tonnage of shipping of the whole world, but is the increase of the tonnage of the shipping of the British Empire only, while the number of ships he gives as having been in collision includes ships of all nations, in collision in all parts of the world.

Comparisons to be of use must be made between facts or figures that have some connection with or some direct bearing on each other, and on the subject. To do as Mr. Jeula has done, and to take the mere increase of tonnage in the ships of one nation—viz., in the British in one year, and to compare it with the increase of collisions of all sorts, of all ships, of all nations, all over the world in a year is to prove nothing; but even if he were to go further and to get particulars of the increase of tonnage of the whole world, and to compare that increase with the increase in collisions over the whole world, he would still do nothing of any use. A ship, say, of 8000 tons, may only make one voyage in the year, or may not even make a voyage at all in the year; another ship, a steamer of, say, 400 tons, may make three coasting voyages in a week; another steamer of, say, 100 tons may make a voyage every day, and in the most crowded of narrow channels; and another steamer of, say, 50 tons may make two or more voyages a day. It is clear, then, that the figures representing the mere increase in the tonnage of one country during one year, afford no means of making the comparison Mr. Jeula has sought to make. The number of voyages compared with the number of collisions can alone afford the means for making a trustworthy comparison.

We have no means of knowing the number of voyages made in a year by all ships of all nations in all parts of the world; but we have the means of knowing to a certain extent the number of voyages made by ships, British and foreign, trading to and from ports in the United Kingdom, and having this knowledge we will, for the information of our readers, make a brief comparison of two things that will be useful, because they have an immediate bearing on each other—viz., the number of voyages to and from ports in the United Kingdom, and the number of collisions, as shown in the Board of Trade Wreck Register on and near the coasts of the United Kingdom. Our figures include foreign as well as British ships.

In making our comparisons, we have, for purposes of convenience, and with a view to clearness, divided collisions into three classes:—Class 1, in which both ships were under weigh at the time of collision; Class 2, in which one ship was under weigh, and the other at anchor; and Class 3, in which ships have broken from their moorings, and have bumped against other ships, all alike included as collisions in Mr. Jeula's figures.

The result we arrive at is as follows:—

Class 1, both ships under weigh.	{ 1856 ... 249 collisions 1870 ... 224 collisions }	decrease of 19.
Class 2, one ship under weigh and the other at anchor.	{ 1856 ... 44 collisions 1870 ... 80 collisions }	increase of 36.
Class 3, ships breaking from anchors and fouling.	{ 1856 ... 29 collisions 1870 ... 57 collisions }	increase of 28.
Total of classes 1, 2, and 3	{ 1856 ... 316 collisions 1870 ... 361 collisions }	increase of 45.

As regards Class 2 and Class 3, comment is unnecessary, and these classes would not have been included at all in our present remarks had not Mr. Jeula swelled his number of collisions by including them. That a certain number of ships ran into piers or into other ships at anchor, or that a certain number of cables parted in a given time, has no bearing on the steering and sailing rules, out of a discussion of which the present controversy has arisen, and Classes 2 and 3 are such cases. Mr. Jeula may properly classify them in his collision tables for his purposes, but we are considering, not the casualties as classified by Lloyds for underwriters, but the new Rule of the Road as bearing on the preventing of collisions. There is nothing new in the rules as regards avoiding ships at anchor; for there is no rule on the subject. We, therefore, omit them from our consideration, and confine our remarks to collisions between two ships, both of which were under weigh.

If we analyse the collisions between ships under weigh, we get the following figures:—

BOTH UNDER WEIGH.

Collisions between two steamers ...	{ 1856 ... 6 1870 ... 19 }	increase of 13 in 15 years.
Collisions between two sailing ships	{ 1856 ... 179 1870 ... 137 }	decrease of 42 in 15 years.
Collisions between a sailing ship and steamer.	{ 1856 ... 58 1870 ... 68 }	increase of 10 in 15 years.
Totals	{ 1856 ... 243 1870 ... 224 }	decrease 19.

As regards voyages, we arrive at the following result:—

Number of steamers' voyages...	{ in 1856, 36,556 in 1870, 72,655 }	increase of 36,099 voyages.
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Number of voyages of sailing ships.	{ in 1856, 206,608 } decrease of 18,530	{ in 1870, 188,078 } voyages.
Total voyages recorded, sailing and steam.	{ in 1856, 243,164 } increase of 17,569	{ in 1870, 260,733 } voyages.

The above statement of voyages only includes ships requiring clearance. It does not, therefore, include any voyages made by tug steamers, nor by ships in the coasting trade, when exclusively employed in carrying passengers, nor by ships in the coasting trade carrying ballast, nor does it include any voyages made by ships carrying the following cargoes in the coasting trade—viz., ashes, bavins, bones for manure, bricks, chalk, clay, granite chippings, faggots, fish alive, flints, gravel, hay, ironstone, kelp and lime, meat, empty packages, pebbles, chimney and flower pots made of clay, sand, slates, stones, straw, tiles and pipes, timber and wood (British) for pit props and railway sleepers. The collisions, of course, do include all ships, so that when we bear in mind that, as in the case of colliers, the return voyage in ballast, or a voyage with the above articles, is not included in the official return of voyages, the proportion of collisions to voyages given below, shows far too high a number. It will be seen that, whilst all the collisions are recorded on and near the coasts of the United Kingdom, a very great number of voyages are not recorded.

By comparing increase or decrease of collisions between ships under weigh with the increase or decrease of voyages, we have the following result :—

Increase in number of voyages of steamers.	} 86,099	{ Increase of collisions between two steamers. } 18 { Increase of collisions between a steamer and sailing ship. } 10 { Decrease of collisions between two sailing ships. } 42 { Decrease of collisions, sailing and steam, both under weigh. } 19
Decrease in number of voyages of sailing ships.	} 18,530	
Increase in total voyages, sailing and steam.	} 17,569	

In plain words, with an increase of 17,569 recorded voyages, we have an absolute decrease of 19 collisions. The alarming increase resolves itself into a positive diminution of numbers; and, as regards the proportion of recorded voyages to collisions, we find that in 1856, with 243,164 voyages, we had 243 collisions with both ships under weigh, and that in 1870 we had, with 260,733 voyages, 224 collisions with both ships under weigh. In other words, in 1856 one voyage in 1,000 resulted in collision, whereas, in 1870, one voyage in 1,165 resulted in collision. The number of collisions in 1870 is 19 below the average of the fifteen years. When we bear in mind that this diminution in

collision is taking place concurrently with increased trade, increased speed, and increased length of ship, we do not know what more can be said in favour of the present rules.

The following letter in the *Times* of the 17th of May, 1872, is very much to the point:—

“ Sir,—Your correspondent Mr. Jeula and also Mr. Fortescue have “ fallen into an error in supposing that the number of collisions will, with “ equal management, increase merely in proportion to the number of “ vessels. The true theory is that the number of collisions will vary as “ the combinations of the number of vessels taken two and two; for, “ obviously, every vessel is liable to come into collision with every other. “ Suppose, for instance, that there are on a certain river two vessels only, “ and that they come into collision once a year on an average. Suppose “ now that two new vessels are introduced; then each of them will come “ into collision not only with the other, but with each of the former two “ vessels, so that instead of the number of collisions being doubled, it “ will be increased in the ratio of six to one. And this will hold good “ whatever be the numbers. Applying this theory to Mr. Jeula’s “ statistics as to the number of vessels, I find, that with equal manage- “ ment the collisions of sailing vessels *would have increased 21 per cent.* “ *instead of 9·4 per cent.* as he supposes; and that the collisions of “ steamers *would have more than doubled* instead of increasing 63·4 per “ cent.

“ The conclusions to be drawn from the statistics (of Mr. Jeula) are, “ therefore, the reverse of those which appear to have been drawn, and “ the proportionate number of collisions *has decreased materially* instead “ of increasing. There is nothing so fallacious as figures.

“ A WRANGLER OF FORMER DAYS.”

In our remarks we have not mentioned the fact that many collisions happen between ships on rivers, that is to say, in waters subject to Local Bye-Laws, and not necessarily subject to the steering and sailing rules at all.

CARBOLIC ACID SOAP.—We have received some samples of this soap manufactured by Mr. Crace Calvert. It is said to contain twenty per cent. of carbolic acid. It is transparent and elegant in appearance, and is most useful for cleansing and purifying the skin. We have used the soap for more than a year with satisfaction. It gives a freshness to the skin, and, used to the teeth and mouth, is very refreshing. In the sick room it is most valuable.

ON THE METHOD FOR FINDING THE CO-EFFICIENTS B AND C, AS GIVEN AT PAGE 57 OF THE ADMIRALTY ELEMENTARY MANUAL FOR DEVIATION.

BY J. GORDON, A.M.

(1.)—COLUMN IV.

The Formula, for the upper part of Column IV., is $B S + C C$: continued from S_0 to S_7 , and from C_0 to C_7 . Therefore the sum of the upper part is $B (S_0 + S_1 + \dots + S_7) + C (C_0 + C_1 + \dots + C_7)$.

The sums of the Sines and Cosines, contained in this, may be easily obtained from a Table of Natural Sines, and will be found to be 4.576585 and 5.576585, respectively. Call these m and n : therefore sum of upper part = $m B + n C$.

The Formula, for lower part, is $B S - C C$: continued from S_8 to S_{11} , and from C_8 to C_1 . Therefore, the sum of the lower part = $n B - m C$.

(2.)—COLUMN V.

The upper part of Column V. has for its Formula $B S^2 + C S C$: continued from S_0 to S_7 , and from C_0 to C_7 . Therefore, the sum of the upper part is $B (S_0^2 + S_1^2 + \dots + S_7^2) + C (C_0 S_0 + C_1 S_1 + \dots + C_7 S_7)$. But $S_1^2 + S_7^2 = 1$, $S_2^2 + S_6^2 = 1$, &c. And $C S$ being = $\frac{1}{2}$ sine of twice course, we have the co-efficient of $C = \frac{1}{2} (S_0 + S_2 + \dots + S_{14}) = S_0 + S_2 + S_4 + S_6 + \frac{1}{2} S_8$, which can be easily found from a Table of Natural Sines, say = p . Therefore, the sum of the upper part is = $3\frac{1}{2} B + p C$. The Formula, for the lower part, is $B S^2 - C S C$: continued from S_8^2 to S_{11}^2 , and from $C_8 S_8$ to $C_1 S_1$. The sum of the lower part is, therefore, $4\frac{1}{2} B - p C$.

Hence, the sum of the whole of Column V. is $8 B$. And B is found, by dividing that sum by 8.

(3.)—COLUMN VI.

The Formula, for the upper part is, is $B C S + C C^2$: continued from S_0 to S_7 , and from C_0 to C_7 . Therefore, the sum of the upper part is, $p B + 4\frac{1}{2} C$.

The Formula, for the lower part, is $- B S C + C C^2$: continued from S_8 to S_{11} and C_8 to C_1 . Therefore, the sum of the lower part is $- p B + 3\frac{1}{2} C$. Hence, the sum of the whole column is $8 C$. And C is found by dividing that sum by 8.

Note.—The above values of B and C are found precisely as in the Elementary Manual. But the calculation required to obtain Columns V. and VI. would be a formidable one to a practical navigator. I therefore venture to propose the following method, which involves only simple arithmetical rules, and gives the results within as great a degree of accuracy as the data themselves.

(4.)—NEW METHOD.

From (1), we have $m B + n C = 112^\circ 15'$, say $= a$.

$$n B - m C = 9645, \text{ say } = b.$$

$$\text{Hence, } \frac{m}{n} B + C = \frac{a}{n}$$

$$\text{and } \frac{n}{m} B - C = \frac{b}{m}$$

$$\text{By addition, } \left(\frac{m}{n} + \frac{n}{m}\right) B = \frac{a}{n} + \frac{b}{m}$$

$$\text{Similarly, } \left(\frac{m}{n} + \frac{n}{m}\right) C = \frac{a}{m} - \frac{b}{n}$$

The values of B and C can be easily calculated from these Formula. But, if we substitute for m , n , a , and b their values, and make a few arithmetical changes, we shall obtain the following short method:—

$$a = + 112^\circ 15' \div 11 = + 10^\circ 12'$$

$$a \div 9 = + 12^\circ 28'$$

$$b = + 96 \quad 45 \div 9 = + 10 \quad 45$$

$$b \div 11 = + 8 \quad 48$$

$$\text{Add } + 20 \quad 57$$

$$\text{Subtract } + 8 \quad 40$$

$$\text{Correction } - 42$$

$$\text{Correction } - 7$$

$$B = + 20 \quad 15$$

$$C = + 8 \quad 33$$

The correction is found by doubling the arcs $20^\circ 57'$, and $8^\circ 40'$, and then reckoning the degrees as minutes.

Note.—If we use the exact values of m and n , we will find $B = + 20^\circ 15'$, and $C = + 8^\circ 33'$.

A similar simple arithmetical process may be employed for finding the co-efficients D and E.

(5.)—ON FINDING THE CO-EFFICIENTS A, D, AND E: AS GIVEN IN THE MANUAL, PAGE 58.

We need not make any remark regarding A, farther than it would also be obtained, by adding together the whole of the deviations in Columns I. and II., and dividing the sum by 32.

For Column IV. a, the Formula is D Sine twice course + E Cosine twice course for the upper part of that column: the course being taken from 0 to 3 points. Consequently, the sum of upper part is $D (S_0 + S_1 + S_2 + S_3 + S_4) + E (C_0 + C_1 + C_2 + C_3 + C_4)$. Now $S_0 + \dots + S_4 = 2.0137$, and $C_0 + \dots + C_4 = 3.0137$: call these a and b respectively. Hence, sum of upper part is $= a D + b E$.

The Formula for the lower part is D Sine twice Co - E C twice Co, from which we can find in exactly a similar manner, as above, that the sum of the lower part is $b D - a E$.

We thence deduce, similarly, as in (5), that:—

$$\left(\frac{a}{b} + \frac{b}{a}\right) D = \frac{13^\circ 20'}{b} + \frac{22^\circ 50'}{a}$$

and

$$\left(\frac{a}{b} + \frac{b}{a}\right) E = \frac{13^\circ 20'}{a} - \frac{22^\circ 50'}{b}$$

The results calculated from this are, B = + 7° 17', and E = - 0° 27'.

But the following easy arithmetical process will give D and E correct within a few minutes:—

$+ 13^\circ 20' \div 8 = + 4^\circ 27'$ $+ 22 50 \div 2 = + 11 25$ <hr style="width: 50%; margin: 0 auto;"/> $\text{Add, } 2) + 15 52$ $\quad + 7 56$ <hr style="width: 50%; margin: 0 auto;"/> $\text{Correction, subtract } 92$ $B = + 7 24$	$+ 13^\circ 20' \div 2 = + 6^\circ 40'$ $+ 22 50 \div 3 = + 7 87$ <hr style="width: 50%; margin: 0 auto;"/> $\text{Subtract, } 2) - 0 57$ $\quad - 0 29$ <hr style="width: 50%; margin: 0 auto;"/> $\text{Correction, subtract } 2$ $C = - 0 27$
--	--

Note.—These Corrections are found by doubling 15° 52', and 0° 57'; and then reckoning the degrees thus found as minutes. It may be remarked that the values of B, C, D, and E differ from those found in the Manual. This may be accounted for, because the Formulæ BS + C C, &c., are not exact; and there are also, in all probability, errors in the observations. Consequently, multiplying by S and C, may be as apt to increase those errors as to destroy them.

GREAT YARMOUTH.

There has just been published the first volume of a somewhat remarkable work on local history, entitled the "Perlustration of Great Yarmouth"* written by Mr. C. J. Palmer, F.S.A., who, in 1854, published "Manship's History" of the same place, which had remained in MS. from the year 1619, when it was written; and to this work Mr. Palmer wrote a "Continuation," bringing down the history of the borough to 1856. In these and in the intermediate works of Swinden and Druery, little had been said on the subjects of genealogy and heraldry, and it was mainly to supply this deficiency that Mr. Palmer undertook the present work. These are subjects not well suited to our pages; but Mr. Palmer has contrived to interweave a great many notices of ancient customs, franchises, and folklore, with narratives of events, biographical sketches, and other matters which, pleasingly blended together, render the book attractive and interesting to the general reader.

* The *Perlustration of Great Yarmouth, with Gorleston and Southtown*. Vol. I. Post quarto, pp. 403, with 145 illustrations. Published by George Nall, Great Yarmouth. Bound in cloth. Price, £1 ls.

There are probably few of *our* readers who are not in some way or other acquainted with the very ancient but still flourishing town of Great Yarmouth, which is built on a long strip of sand originally formed at the entrance of the great estuary of the Yare, in the same way as bars are still accumulated at the mouths of rivers.

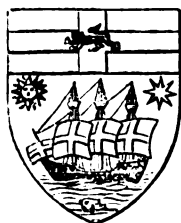
This sand rested on primeval chalk at a depth of 600 feet, as was ascertained by a boring (a section of which we are enabled to give) made in the attempt to sink an Artesian well at Lacon's well-known brewery. Beneath the surface soil was found an accumulation of sand and shingle; then a stratum of dark sand; next a fine coloured clay to a depth of 350 feet; and above the chalk a band of flints, six feet thick (p. 4). When the sand-bank we have mentioned became dry, and was covered by a short coarse grass, the place was resorted to by the fishermen of the western ports, and from Flanders during the herring fishery, from Michaelmas to Martinmas. They acquired the rights of "Den" and "Strond," and ultimately a town sprang up; but its great prosperity dates from the reign of King John, who granted a charter constituting it a free borough with the privilege of self-government. During the middle ages, Yarmouth greatly increased in wealth and importance, and was able to furnish Edward III. with more ships and men than almost any other port; and that monarch was so pleased with the valiant services rendered by the men of Yarmouth, that he changed the arms of the town by striking off the heads of the three herrings which had been previously borne, and substituting the heads of three lions.



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which had been previously borne, and substituting the heads of three lions.

In the reign of Queen Elizabeth the town greatly flourished, and the rich merchants built for themselves splendid houses, some of which, in a mutilated state, remain to this day. At the Star Hotel there is a room of that period, of which a good engraving is given (p. 262). Many inhabitants were members of the Company of Merchant Adventurers of England, as appears by the arms of that Company (of which we give an engraving) still to be seen in some of the houses (p. 858). Each merchant, according to an old custom, had



his device called a "merchant's mark," to which sometimes his initials were added as in the annexed engraving of the merchant's mark of John Lucas (p. 377). Another mark appears on the seal of Sir Thomas Medowe (p. 259).



The plan of Mr. Palmer's work is novel. He

begins at the north end of the town, and proceeds, step by step, towards the south, traversing the numerous rows, which all run east and west, and to which there is nothing similar in the kingdom. Of these he gives several highly interesting and well executed engravings. We are enabled to give a vignette of the first row, called Ramp Row, because it adjoined the rampart or town wall, a portion of which may be seen (p. 136).



The author describes every old house, or the sites of those destroyed, to which any interest attaches; giving biographical sketches of those persons who were at all remarkable in local history. By this means Mr. Palmer is enabled to illustrate such events in national history

as the Civil War, the Restoration, and the Revolution of 1688. He lingers on the sites of monastic buildings, and gives some interesting particulars of the ancient guilds (pp. 58 and 229).

Bringing down the history to more modern times, the author introduces many original anecdotes of Nelson, Duncan, St. Vincent, and Trowbridge, the two latter having represented the town in Parliament.

Availing himself of a private MS. diary, Mr. Palmer gives some amusing extracts, proving the prevalence of Republican notions among a section of the people immediately preceding the breaking out of the French Revolution (p. 372). As Yarmouth, during the great war with France, was a station for the North Sea Fleet, and had a port-admiral, we may expect that in the next volume of the "Perlustation" Mr. Palmer will give us many naval anecdotes; and when he reaches the beach we may hope to hear of the daring exploits of Yarmouth boatmen. Take up this book where you will, the reader will find it difficult to lay it down again, so replete is it with matter of general interest, while to those who are connected with the families of the town and neighbourhood it must be invaluable. The work is published by subscription in parts, price 1s. 6d. each, each part containing on an average ten or twelve illustrations; and as the number of copies is limited, and as most of the plates are destroyed or dispersed, no second edition can be issued. The book, therefore, will one day be sought after for the libraries of the curious. The labour of compilation must have been excessive, and could only have been endured from a love of the subject. We shall probably resume our notice in a future number, and in the meantime we say to Mr. Palmer, "Go on and prosper."

SOCIETIES, MEETINGS, &c.

ROYAL GEOGRAPHICAL SOCIETY, Session 1871-2, May 18th. Major-General Sir Henry C. Rawlinson, K.C.B., President, in the chair.

The President, in commenting on the telegram that had been recently published respecting Dr. Livingstone, stated that it had been transmitted from Aden by one of the employés of the Telegraph Company; and that, on Mr. Pender sending an inquiry by the cable to the official, a reply was received to the effect that he had obtained the news regarding the meeting of Dr. Livingstone and Mr. Stanley at Ujiji, on boarding the *Abydos* steamer at Aden, which had left Zanzibar on the 15th of April. He (the President) held the news to be very probable, as Mr. Stanley ought to be at Ujiji at the time stated, and Dr. Livingstone was very likely to have crossed to that point to receive the stores that there awaited him. It was necessary, however, to observe that, in such case, it would not be that Mr. Stanley had relieved Livingstone, but the exact contrary,—that Livingstone had relieved Mr. Stanley; for the latter had lost all his stores and men in September previous, in the fight near Unyanyembe, whilst Livingstone had abundant supplies at Ujiji. The *Abydos* would, of course, bring letters and full details, which would have been delivered by the mail of the previous Saturday had not the steamer missed the mail at Aden by two or three days. There was nothing for it but to wait patiently another week. The Rev. Horace Waller stated that he disbelieved the telegram, which was, no doubt, derived from a native rumour at Zanzibar.

The following papers were read:—1. "On the Position of Pein, Charchand, and Lob-Nor, in Central Asia," by Mr. Robert B. Shaw, Gold Medallist of the Society, and Resident in Ladak. The city and country of Pein, mentioned by Marco Polo, was believed by Mr. Shaw to have been destroyed by the moving sands of the Makla Takan Desert, north-east of Khotan. Charchand still existed, a little further south, and at a considerable elevation (perhaps 7,000 feet) on the northern slopes of the Kuen-Lun, and was an important and interesting town, not visited by any modern European. Mr. Shaw had obtained copious and valuable information from native traders regarding the geography of this immense and almost unknown region, and had supplied to the Society copies of their itineraries. 2. "A Havildar's Journey up the Chitral Valley to Faizabad," by Major Montgomerie, R.E. The "Havildar," a native corporal of Sappers, was the most recent of the native agents trained as explorers by the officers of the Trigonometrical Survey, like the celebrated "Pundits," who explored Thibet, and the "Mirza," who crossed the Pamir Steppe, all of whom were taught to

fix positions and altitudes with scientific accuracy. The Havildar's journey occupied from the 12th of August to the 18th of December, 1870. Leaving Peshawur, he crossed the chief mountain range by the Nuksan Pass, 17,000 feet, returning by the Dora Pass, 16,000 feet. His party, in some places, had to fight their way against predatory hordes of Kaffirs, and he had a narrow escape of death at the hands of Aman-i-Moolk, and his relative, Meer Wuli, the assassin of the English traveller, Hayward.

ROYAL UNITED SERVICE INSTITUTION.—On Friday, 24th May, Mr. Alexander Beazeley, C.E., read a most interesting paper on "Coast Fog-Signals." This gentleman has made this important subject his special study for some years, and in the present paper he brought up the subject to its latest development, and gave a vast amount of valuable information. In addition to this, he strongly urged the necessity for practical experiments in this country, both with the view of discovering the best means of producing sound, and of investigating the nature of the obstructiveness of fogs. At the conclusion, Dr. Tyndall, who was present, paid the lecturer a very marked compliment, and the lecture was exceedingly well received by an appreciative audience. We hope to give a full account of the paper in our next number.

BOOKS RECEIVED.

A pamphlet by Vice-Admiral A. P. Ryder on "Cork Life Belts or Mattresses for Ships' Use." It is clearly written and is exhaustive. The illustrations are good. This is another effort of the gallant Admiral in the right direction. Harrison and Sons, St. Martin's Lane.

"Die Wirbelstürme, Tornados, und Wettersäulen in der Erd-Atmosphäre dargestellt und wissenschaftlich erklärt," von Dr. Theodor Reye. This book is most carefully got up, and contains four storm-charts and thirty woodcuts and lithographs. Hannover, 1872. We hope to review it shortly.

"Canal and River Engineering," by David Stevenson. Second edition. A. and C. Black, Edinburgh. Will also be noticed shortly.

We have received a copy of a paper read at the Society of Arts by Captain Bouchier, R.N., on the training-ship *Goliath*. It is carefully got up, and the earnestness and practical common sense of the writer pervade it. We recommend it strongly to the notice of our readers. It is carefully reprinted in a pamphlet form by Shaw & Sons, Fetter Lane, London.

MONTHLY ABSTRACT OF NAUTICAL NOTICES.

No.	PLACE.	SUBJECT.
101	ENGLAND—Bristol Channel—Bull Point	Danger off.
102	BAY OF FUNDY—L'Etang Harbour—Bliss Island	Establishment of a Light.
103	NORTH SEA—Jade River	Entrance Light Vessel.
104	NORTH SEA—Jade River	Temporary Cable Bar and Torpedoes
105	BENGAL BAY—East Coast of India—Gopaulpore	Establishment of a Light.
106	NEW BRUNSWICK—North Coast—Bathurst	Harbour Lights.
107	UNITED STATES—Texas—Matagorda Bay	Entrance Lights
108	SCOTLAND—Mull of Cantyre	Temporary alteration of Light.
109	FRANCE—West Coast—Douarnenez Port	Establishment of a Light.
110	TASMANIA—West Coast—Cape Grim and West Point	Sunken Rock off.

NAUTICAL NOTICES.

101.—ENGLAND.—*Bristol Channel.—Bull Point.*—The barque *Alma*, drawing 17 feet water, recently struck on a sunken rock, stated to lie N. by W. about three-quarters of a mile from Bull point, north coast of Devon, and at the time of taking the ground, which was at high water, several large vessels were passing inshore. Until the locality of this reported danger has been examined, vessels are recommended not to approach Bull or Morte points without due caution.

102.—BAY OF FUNDY.—*L'Etang Harbour.—Bliss Island.*—A *fixed red* light, 45 feet above the sea, and visible 12 miles, is now exhibited on the West point of the island. The lighthouse, 90 feet high, is painted white. Position, lat. 45° 1' 15" N., long. 66° 51' W.

103.—NORTH SEA.—*Jade River.*—The following alterations have been made in the entrance light vessel. The lights are 51 feet and 31 feet respectively above the sea, and during a heavy sea it may be necessary to reduce those heights to 41 and 26 feet. The black baskets will be on the fore and main masts. If the light vessel is not on its station, no baskets will be hoisted, but a black square flag will be shown at the main, and the light will not be exhibited. During thick and foggy weather a bell will be sounded for a period of *one minute every three minutes*. Vessels steering a wrong course when in sight of the light vessel will be warned of their danger by the firing of minute guns, sounding the bell, or by signals of the International Code, and the proper course will be communicated when possible.

104.—NORTH SEA.—*Jade River*.—For experimental purposes a cable bar will in a short time be placed at No. 15 white buoy, extending 180 yards east and west, and 70 yards north and south, into the navigable channel. It will be marked by buoys. Also a row of torpedoes, provided with matches, will be laid about half a mile S.E. $\frac{1}{2}$ E. from the red roads buoy; they will extend 160 yards east and west, and each end will be marked by a red buoy.

105.—BENGAL BAY.—*East Coast of India*.—*Gopaulpore*.—A *fixed white* light, 89 feet above the sea, that can be seen 8 miles, is exhibited from a flag-staff in lat. $19^{\circ} 13' N.$, long. $84^{\circ} 52' E.$ Vessels making the roadstead should bring the light to bear N.W. $\frac{1}{2}$ W., and anchor in from 8 to 9 fathoms water.

106.—NEW BRUNSWICK.—*North Coast*.—*Bathurst*.—The lights at the entrance of this harbour are situated on *Carron Point*, the eastern side of the entrance to the harbour, and not on *Alston's point*. The northern lighthouse is in lat. $47^{\circ} 39' 20'' N.$, long. $65^{\circ} 36' 40'' W.$

107.—UNITED STATES.—*Texas*.—*Matagorda Bay*.—Screw pile lighthouses have been recently on east and west shoals, inside *Decro's point*, entrance to the bay. The light on the west shoal (port side going in) is a *fixed white* light, 85 feet above the sea, and should be seen 11 miles. The purpose of the light is to guide vessels through the *Swash channel* and clear of the shoal lying on the west side of the channel; approximate position (as given), lat. $28^{\circ} 25' N.$, long. $96^{\circ} 22' W.$ The light on the east shoal (starboard side going in) is a *fixed red* light, 35 feet above the sea, and should be seen 11 miles. The purpose of the light is to guide vessels through the *Swash Channel* and clear of the shoal lying on the east side of the channel; approximate position (as given), lat. $28^{\circ} 25' 30'' N.$, long. $96^{\circ} 22' W.$ Both lights are of the fourth order, and both lighthouses are painted white.

108.—SCOTLAND.—*Mull of Cantyre Light*.—The character of the illuminating apparatus of the light being about to be altered, it will be necessary during the next two months to exhibit from a temporary lantern a light of less power; and consequently the light will not be seen from such a distance as the present light during the progress of the alteration. Mariners are accordingly cautioned.

109.—FRANCE.—*West Coast*.—*Douarnenez Port*.—On the 15th June a *red fixed* light will be exhibited from the extremity of *Rosmear Mole*, 20 feet above high water and visible 5 miles. Position, lat. $48^{\circ} 5' 50'' N.$, long. $4^{\circ} 19' 30'' W.$

110.—TASMANIA.—*West Coast*.—A sunken rock, having 3 fathoms of water on it, has been reported about 18 miles off the west coast of Tasmania, between *Cape Grim* and *West Point*. From it *Cape Grim* bears N.E. $\frac{1}{2}$ E., 15 miles, and *West Point* S.E. by E. $\frac{1}{2}$ E. 14 miles.

These bearings place the rock in lat. 40° 48' 30" S., long. 144° 23' E. In bad weather the sea breaks heavily over the rock.

CHARTS, ETC., PUBLISHED BY THE HYDROGRAPHIC OFFICE, ADMIRALTY,
IN THE MONTH OF MAY, 1872.

Sold by J. D. POTTER, 81, *Poultry, E.C.*

No.	Scale.		s.	d.
154.	m = 2·0	England, approaches to Falmouth	2	6
120.	m = 1·0	Schelde River, Sea to Antwerp	4	0
804.	m = 2·8	Gaudeloupe, approaches to Pointe à Pitre ...	1	6
1014.	m = 0·25	Australia, South Coast, Port Victor to Guichen Bay... ..	1	6
1015.	m = 0·25	Australia, South Coast, Guichen Bay to Glenelg River	1	6
186.	m = 0·4	Mediterranean, Sicily, Mazzara to Palma, including Pantellaria... ..	2	6

HYDROGRAPHIC.

NOTICES PUBLISHED BY THE ADMIRALTY.

Hydrographic Notice, No. 7, relates to the Australia Directory, Vol. I, and contains remarks on the navigation of the coast of the eastern part of the province of Victoria, by Navigating Lieutenant Henry J. Stanley, in charge of the coast survey.

This notice is a valuable addition to the Hydrography of an important portion of the coast of Australia, and embraces the portion of the coast between Wilson promontory and Cape Howe. It contains full descriptive information of the coast for navigation and recognition, with prevailing winds, set of tides and currents, &c., and also descriptions of the anchorages of Waterloo bay, Refuge and Sealer's coves, Corner inlet, Bentley harbour, Port Albert, the anchorage at Gabo island, &c., with tidal signals and full information to the mariner bound to any of the ports.

Hydrographic Notice No. 8 contains information relative to the Sulu Sea, and is by Navigating Lieutenant Francis J. Gray, of H.M. surveying vessel *Nassau*, Commander William Chimmo, R.N., at present employed in the Eastern Archipelago. A descriptive account is given of the islands and dangers lying in the passage between Manila and Ilo Ilo, and of the anchorage at the last named place, and from the Sulu Sea to Sulu and Abian islands, with descriptions of their anchorages and the lesser islands in their vicinity. Cagayan Sulu group, with their dangers and anchorages, are also described, the shoals are numerous, and the navigation intricate; and where so little is known, this addition

to our knowledge is both timely and valuable, and we only regret our inability to publish the two pamphlets *in extenso*.

ENTRANCE TO ARAUCO BAY, COAST OF CHILI.—Navigating Lieutenant, John Riches of H. M. S. *Scylla*, in a report to Captain C. R. F. Boxer, R. N., of that ship, states that for a period of seven days he had searched for the assumed danger on which the *Araucania* was said to have struck, on 18th March, 1871, and also in the position reported by the Commander of the Chilian war-steamer *Ancud*, (mentioned in the same Hydrographic Notice, No. 16) examining the ground for a considerable distance around both localities; but that he had not succeeded in finding any indications of the reported danger.

HAITAN STRAIT.—The following information relative to a sunken rock in Haitan strait, upon which the American steamvessel *Suro-nada* struck in January, 1872, (the position of which was ascertained by the officers of the United States ship *Ashuelot*, under the orders of Rear-Admiral John Rodgers) has been received from the Vice-Admiral Commanding-in-Chief in China, 1872. This sunken danger, which has been named the "Ashuelot rock," lies nearly in the centre of the southern part of Haitan strait about three cables to the westward of Low island; it has 10 feet on it at low water springs, and 6 to 7½ fathoms were found at two boat's lengths from the rock. From the rock, Low island bears E. ¼ N., Junk Sail rock S. E. by S., and the middle of Pass Island S. by W. ½ W. The position of this rock narrows the southern part of Haitan strait to 2½ cables at low water, and renders this part unsafe at that time of tide for vessels drawing more than 9 or 10 feet.

ST. LAWRENCE RIVER.—**ST. ROQUE SHOAL LIGHTVESSEL.**—A lightvessel, from which a light is now exhibited, has been placed on the north-western edge of St. Roque Shoal, in the St. Lawrence River, below Quebec. It exhibits two white lights from different masts, one 16 feet, the other 24 feet above the deck, which, in clear weather, should be seen from a distance of six miles. The vessel is moored in 3½ fathoms at low water springs, and 2½ miles from the old lightvessel. Position, lat. 47° 22' 30" N., long. 70° 17' W. A bell will be tolled in thick or foggy weather, and snowstorms. If the lightvessel should be out of position at any time, the light on the foremast only will be exhibited, and during the day the ball at the foremasthead will be taken down.

RIVER ST. LAWRENCE.—The extreme end of Margaret Island Shoals (River St. Lawrence) is now cleared of the wreck of the barque *Glanmore*, and the Green buoy, which was placed to mark the position of the wreck, has been removed.

GULF OF ST. LAWRENCE.—Notice has been given that the provision dépôt at Shallop Creek (Anticosti), will be removed to the lighthouse station at the south point of the island, in the month of July next.

WALLAROO BAY, SPENCER'S GULF.—We have received the following from the Marine Board Office, Port Adelaide:—Referring to a notice issued from this office on 3rd April, 1871, relative to a shoal patch in Wallaroo Bay, notice is hereby given, that a red-coloured perch buoy has been placed on the said patch, in sixteen (16) feet, at low water, with the following bearings:—Point Riley, extreme N. 32° E.; large chimney of smelting works, S. 59° E. Masters of vessels beating up to the anchorage with S.E. winds are hereby cautioned not to bring the jetty to bear to the southward of E.S.E. until Point Riley bears N. of N.N.E.

OUR OFFICIAL LOG.

GENERAL.

NEW ZEALAND.—The coasting trade of New Zealand has been thrown open, and at the present moment foreign ships employed in carrying goods or passengers coastwise, from one part of New Zealand to another, are subject to the same law and rules to which British ships, when so employed, are subject. (Cap. 320, 35 Vic., No. 62.)

BELGIUM.—The article on free trade, called "Before and After," which appeared in our March number, has been reprinted by authority in the *Moniteur Belge*. We have reason to believe that the same paper will in a short time also have articles founded on the model of ours, which will illustrate the effects of free trade both in Belgium and France. When these articles appear, we shall not fail to make use of them.

TUNIS.—I have to report the existence of a very strong current setting on the Tunisian coast, when the wind prevails from the N.N.W., which is not known apparently to the masters of the commercial navy, in consequence of which no less than five vessels, four being English, were wrecked since the month of December last in the vicinity of Cape Bon. The current runs from four to five knots an hour. All the masters of the wrecked vessels declared that they steered a course from ten to thirty miles clear of the Cape, but found themselves on shore at night. Although there is high land in the interior, the sandy beach of some extent is very low and invisible at night. There is besides no lighthouse on Cape Bon. I am disposed to believe that were the European Governments to allow the Bey to increase the port dues, or were our Government to make him a present of a lantern, his Highness would willingly incur the expense of building a lighthouse on the Cape, which would be of an immense benefit to the ships going direct from the Straits of Gibraltar to Egypt and the Levant, and *vice versa*.—(*Our Own Correspondent.*)

TREATY WITH TUNIS.—We learn that there is every prospect of a treaty being shortly concluded with Tunis, consolidating and revising the existing treaties with that regency. The treaty, amongst other things, will provide for the protection of wrecked property by the Tunisian authorities, the prompt conveyance of intelligence respecting wrecks to her Majesty's Consuls, and the settlement of salvage by her Majesty's Consul-General and the chief Tunisian authority jointly. Wreckers—and Tunisian wreckers not only rob, but murder—are to be severely dealt with. Wrecked goods will pay half-duty only, if sold by the Consul by auction. Otherwise they will pay the usual rate, unless previously shipped in a Tunisian port, when they will be exempt both on import and export. Vessels entering from stress of weather are to be exempted from local dues; and assistance is to be given in arresting deserters.

FEES FOR SURVEYS OF UNSEAWORTHY VESSELS.—In pursuance of the powers vested in them by the 7th Section of the Merchant Shipping Act, 1871, which provides for the survey of ships alleged by seamen to be unseaworthy, the Board of Trade have determined that the fees stated in Column A. of the following scale, may be charged on account of any of the Surveyors appointed by them, under the Merchant Shipping Act, 1854, whose services may be required by the Court having cognizance of the case, and that the fees stated in Column B. may be charged by any person, not being a Board of Trade Surveyor, who may be appointed by the Board or by the Court to survey the ships in question.

In the case of fees, &c., payable on account of the services of a Board of Trade Surveyor, the money is to be paid to the Superintendent, and not to the Surveyor.

Any Surveyor receiving any money will be liable to dismissal.

	COLUMN A.	COLUMN B.
	When the Inspector is an Officer of the Board of Trade.	When the Inspector is not an Officer of the Board of Trade.
For vessels of—	£ s. d.	£ s. d.
250 tons and under 500 tons	1 10 0	8 0 0
500 " 750 "	2 0 0	4 0 0
750 " 1,000 "	2 10 0	5 0 0
1,000 tons and upwards	3 0 0	5 0 0

The travelling and personal allowances to be charged will be the same as those at present allowed to officers of the Board.

Applications for the survey of vessels alleged to be unseaworthy should only be attended to when the survey is required by the Court, or by order of the Board of Trade, under Section 10 of the Act. Applications made by the ships' agents should not be attended to.

RESPONSIBILITY OF MASTERS.—The Board of Trade have informed some engineers, in reply to a letter, that the said Board can give no countenance to any proposals likely to interfere with the position or undermine the responsibility of the master of a British ship. The master is and must remain in undisputed authority over every one on board, whether passengers, officers, engineers, firemen or seamen. It is for the master alone to determine how and to whom he shall give his orders, and those who disobey them must stand the legal consequences.

EUROPEAN COMMISSION OF THE DANUBE.—Factor by which the unit of measurement in each country is to be multiplied to convert the foreign tonnage into its equivalent in English tonnage :—

COUNTRIES.				FACTORS.			
				For Tons.	For Lasts.		
Austro-Hungary...	...	...	multiply by ...	1·00	...	..	..
France ...	...	...	do. ...	0·94	...	..	..
Italy ...	...	...	do. ...	0·94	...	..	..
Turkey, an English ton is equal } to 61 $\frac{5}{8}$ kil. Constantinople }	...	...	do. ...	..	..	..	..
Prussia ...	...	...	do. ...	0·98	...	1·50	..
Russia ...	...	...	do. ...	1·08	...	1·89	..
America (United States)	...	...	do. ...	1·00	...	..	..
Belgium ...	...	...	do. ...	0·95	...	1·81	..
Bremen ...	...	...	do. ...	..	...	4·89	..
Denmark ...	...	...	do. ...	1·00	...	..	..
Spain ...	...	...	do. ...	1·00	...	..	..
Greece { new measurement } ...	...	...	do. ...	0·97	...	..	..
Greece { old measurement } ...	...	...	do. ...	0·78	...	..	..
Hamburg ...	...	...	do. ...	..	...	2·77	..
Hanover ...	...	...	do. ...	0·98	...	2·25	..
Holland ...	...	...	do. ...	0·89	...	1·75	..
Lubeck ...	...	...	do. ...	..	...	1·89	..
Mecklenburgh ...	...	...	do. ...	1·09	...	2·44	..
Norway ...	...	...	do. ...	0·98	...	2·08	..
Oldenburg ...	...	...	do. ...	0·96	...	1·50	..
United Principalities { 4 $\frac{2}{10}$ kil. Galatz } ...	...	...	do. ...	0·97	...	..	..
One English ton = { 3 $\frac{1}{10}$ kil. Braïla } ...	...	...	do. ...	..	...	..	..
Samos ...	...	...	do. ...	0·78	...	..	..
Servia ...	...	...	do. ...	0·97	...	..	..
Sweden ...	...	...	do. ...	1·02	...	1·98	..

Note.—This scale may be used for ascertaining the gross tonnage of

vessels not measured under the English system. But to apply the scale for this purpose it is first necessary to bring the net (register) tonnage up to the gross tonnage by adding to their net tonnage all spaces not included in it.

CANADA, CRIMPING.—We learn from the Dominion, that the recently-passed Act, by which imprisonment is substituted for a fine as the punishment for enticing seamen to desert, has had a good effect: but that no really efficient steps can be taken to prevent crimping, owing to the fact that most British shipmasters are indifferent, and many are in collusion with the crimps. Some British shipmasters receive money from crimps for shipping men from their houses.

SHIPS DRAUGHT OF WATER.—In all cases in which Official Logs come into the possession of Superintendents they are to inspect them and ascertain whether the provisions of the Act of 1871 are complied with as regards the entering of the draught of water. In all cases in which the law is not complied with, a Form Stm. 40 is to be filled up and forwarded to the Marine Department of the Board of Trade.

BOARD OF TRADE.—Mr. John Donovan, late officer of Coastguard at Old Head of Kinsale, has been appointed under the Merchant Shipping Act, 1871, as an officer to record the draft of water of ships at Cardiff. On the 10th October last, Mr. Donovan saved, by the rocket apparatus, the crew, five in all, of the *Erin Lass*, of Aberystwith, stranded in Court-macsherry Bay. The night was very dark, and a heavy gale was blowing. The ship was end on to the shore, thereby offering the smallest mark to the rocket. The first rocket fell on the yardarm, and was washed off a little to the right, and the second rocket, aimed and fired by Mr. Donovan, lodged clean on the ship, and was the means of saving the crew. Mr. Donovan looks on the apparatus as trustworthy and perfect, as all persons do who understand it. The rocket apparatus is kept up by the Board of Trade, and we are glad to find that the Marine Department, presided over by the Right Hon. Chichester Fortescue, appreciates in so effective a manner the services of officers who do their duty in it. Mr. Donovan holds the Albert medal, granted by her most gracious Majesty, on the recommendation of the Board of Trade, for saving life, on a former occasion. He is now to serve under Mr. Neate, another officer eminently distinguished for saving life by the rockets, who was appointed to office under the Marine Department, during the presidency of Mr. John Bright.

ITALIAN MAIL STEAMERS.—A contract has been recently entered into by the Peninsular and Oriental Steam Navigation Company with the Italian Government, by which the Company has engaged to prolong the weekly voyages of their mail steamers from Brindisi to Venice. This arrangement will commence from the 1st July next, and will, no doubt,

be the means of considerably extending the commerce of the Port of Venice, which has already much increased by the opening of the Suez Canal. We also learn that the Italian Government has subsidized the Sicilian Steam Navigation Company's *Trinacria*, to run weekly steamers between Venice, the Piræus, and Constantinople.

BAROMETER MANUAL.—We have received the following notification from the Meteorological Office :—As a general rule, when a Captain has discovered the direction in which a cyclone is moving, he should imagine it to be cut in half by its own track ; then supposing himself to be on the track in the rear of the cyclone, and looking towards the direction in which it is moving, if he wishes to heave-to, he should put his ship on the *starboard tack* if the direction of the wind shows that she is in the *right-hand half*, and on the *port tack* if she be in the *left-hand half*. This holds good in *both* Hemispheres. It is very important to bear in mind that the parts of a cyclone which form its right and left halves change as it changes the direction of its track.

JUSTICE IN THE UNITED STATES.—CASE OF THE "BEBINGTON."—We are happy to be able to record one instance in which a just decision has been arrived at by a Court in the United States, in a case of dispute between a shipmaster and his men. As a rule, seamen have it all their own way in America. If they want to end their contract, they have only to leave the ship and apply to some seamen's lawyer at the port, who, with the assistance of a friendly judge, will find some flaw in the agreement to make the contract null, and compel the master to discharge them with full wages and costs. It, however, more frequently happens that the master prefers to pay a sum down, however unearned or undeserved, rather than incur the expense, delay, and vexation, which is entailed by defending proceeding in the Admiralty Courts of the United States. It is true by British Law a seamen cannot sue for his wages in a foreign port, but the court will not recognise British law ; it is true that the settlement of such disputes is properly within the province of the Consul, but we have no convention with the United States, and to expect their courts to recognise, for the sake of courtesy or justice, what is not required by law or treaty is generally speaking vain. We therefore record with pleasure the following case in which justice was not in the end refused, and the limits of interference by foreign courts in disputes between masters of British ships and their crews defined in a fair spirit. About sixty miles to the south of Charleston is Bulls River, and there seven of the crew of the *Bebington* refused work, stating that they had only shipped for the run from Boston, notwithstanding that they had signed the agreement for the whole voyage. They had received an advance which fully paid them for their services so far, and the master kindly let them go. Their next step appears to have been to proceed to Charles-

ton, where they consulted a lawyer, whose advice, if unscrupulous, was worthy of the audacity and "cuteness" of the late Mr. Fisk, or his partner Jay Gould. Having obtained their release from the ship on the ground that they had shipped for the run only, they threatened the master with proceedings in the Admiralty Court for having "wrongfully discharged them before the termination of their voyage." The ship and master being 60 miles away, the master, for the sake of economy, tried to buy off the attorney and the men, but their demands were so extortionate—viz., 20 dollars a piece, that the Consul in the general interest of justice and shipping, determined to make an attempt to break up the abominable system by protesting against the jurisdiction of the court. This he did, and after some delay, obtained the dismissal of the libel against the ship "on the ground that the case being between a British ship and British seamen, the United States Court of Admiralty would only intervene in a case of hardship, and that the present case did not show any hardship to warrant such intervention." We wish that this important decision may have more than a local effect. It deserves to be posted in large letters throughout all the seaports in the United States.

GOLD COAST.—BLOCKADE.—The Board of Trade have received an official notice that the territory appertaining to France on the Gold Coast—viz., the port of Grand Bassam and the coast comprised between the territory of Assine and Little Bassam exclusively, is effectively blockaded. British subjects are warned not to attempt to violate the said blockade.

ICELAND.—IMPORT DUTIES ON SPIRITS.—The Board of Trade have received a copy of a Danish law of the 26th February last, imposing a duty on all wines, brandies, and spirituous liquors imported into Iceland, at the rate of eight skillings, Danish (about 2d. English) per quart when imported in casks, hogsheads, or the like, and the same sum per one and a half pint when imported in bottles, jugs, pitchers, or similar vessels. Masters of ships will have to declare the quantity they have on board, and pay duty before landing any.

PORTO EMPEDOCLE (GIRGENTI) CUSTOM-HOUSE REGULATIONS.—According to the last regulations, steamships have quite a separate turn to load one after the other, using the same means as for sailing vessels. In case of vessels lying in the roads, and prevented by bad weather from loading, merchants may load any vessel in harbour by extraordinary means.

TUNIS IMPORT DUTIES.—The Board of Trade have received a copy of a despatch from Her Majesty's Agent and Consul-General at Tunis, reporting that the duty on imports into that Regency will be increased from 8 to 8 per cent. on or about the 1st June next.

CHAMPERICO CUSTOMS.—The Board of Trade have received a copy of a despatch from Her Majesty's Chargé d'Affaires at Guatemala, reporting that Champerico, situate in the Department of Suchitepequez, on the

Pacific Coast of Guatemala, was declared to be a port of exportation and importation, and that a Custom-house has been established there.

CONSTANTINOPLE.—CONSULAR FEES.—By a recent order of Her Majesty in Council the customary fee at Constantinople of 25 piastres, paid hitherto as part of and in addition to the charges taken in respect of the Firman Fees, and the customary fee of 5s., paid on each application at the British Consulate of Constantinople for a firman of a vessel to pass the Straits, have been abolished. In lieu of the fees abolished, there is to be levied at her Britannic Majesty's Consulate-General at Constantinople, from every ship on each occasion of entering into the Port of Constantinople, a fee of 10s., to be called "Entrance and Harbour-Master's fee," and a further fee of 5s. for each application for a firman or firmans for each vessel in order to pass the Straits. The customary fee of 10s. hitherto charged on British ships passing the Dardanelles towards the Mediterranean Sea, and taken at her Britannic Majesty's Vice-Consulate at the Dardanelles, has also been abolished.

MEDICAL INSPECTION OF SEAMEN.—MERCHANT SHIPPING ACT, 1867.—The medical inspection of seamen under the provisions of the Merchant Shipping Act of 1867 is slowly making its way at Cardiff, Falmouth, and Newcastle, and we hope soon to hear that these inspections are extending to other ports.

FRENCH BILLS OF LADING.—The Board of Trade have given notice, that from the 1st of May the forms for these Bills of Lading, which, according to the law of the 11th of June, 1842, could only receive the extra stamp at Paris, may now undergo that formality at the chief town of each department. These forms may be stamped in advance. Forms left, with the amount of duty chargeable, at the registrar's office, can be returned after a delay to be fixed by the receiver. New stamps of the value of 50c. and 1f. may, in a few days, be procured from Registrars' offices. Two franc stamps will be issued later.

REGISTRY SEAMEN AND MARINES.—The Board of Admiralty have decided to establish a Registry of Seamen and Marines of the Navy, on a plan somewhat similar to that in use at the Board of Trade.

CONSULAR.—The Queen has been graciously pleased to appoint Joseph Hutton Dupuis, Esq., now British Vice-Consul at Sulina, to be her Majesty's Vice-Consul at Adrianople, and to approve of Don Juan Pfeil as Consul-General in England for the Oriental Republic of the Uruguay, and of Mr. W. Nicks as Vice-Consul at Gloucester for the German Empire.

MEXICO.—FISHING REGULATIONS.—The Board of Trade have received a despatch, enclosing an extract from a newspaper published in Washington, relative to a decree issued by the Mexican Government, on the 16th March last, laying down regulations for vessels employed in fishing or pearl-diving on the coasts of Mexico. The newspaper extract which

contains the substance of the decree can be seen at the Board of Trade.

LIBAU, HARBOUR DUES.—The Board of Trade have received a copy of an official notice of the Russian Government, notifying that the reduction of harbour dues accorded last year to vessels arriving at the port of Libau will be maintained during the navigation of the present year, and that the same privilege may be extended to Windau, Reval, and Port Baltic, in the event of a desire to that effect being expressed by the mercantile and municipal bodies of those localities.

SANTANDER.—PORT DUES.—The expenses incurred in the works to improve the port of Santander will be defrayed by the imposition in that port of the following additional dues :—As to vessels used in trade with Europe, the Coasts of Asia and Africa in the Mediterranean, and the African Coast in the Atlantic as far as Cape Mogador, the rate is 45 centimes of peseta per metrical ton of goods loaded, and 95 centimes as to vessels trading with all other countries. Vessels loading or discharging coal or iron ore will only pay the half of the above.

PORT OF ETEN.—The Board of Trade have received a despatch, enclosing a translation of a decree of the Peruvian Government, dated 21st March last, annulling a previous decree raising the port of Eten to be a port of entry in the place of San José de Lambayeque, and reinstating the latter port in its former rank, but providing that vessels which may have left foreign ports, destined for Eten, are to be allowed, up to the 1st of July next, to go into that port as if it were still a port of entry.

SHIPPING AND MERCANTILE GAZETTE CORRESPONDENCE.

(Reprinted by special arrangement with Sir WILLIAM MITCHELL.)

POWER OF ATTORNEY.—Where a captain of a ship gives a power of attorney to act for him, generally, during his absence, without limit as to voyage or time, the power is not revoked by the Statute of Limitations. A power of attorney must be revoked either by death, or by the party granting it.

PUBLIC HOLIDAYS.—Can a merchant compel the master of a Norwegian ship, at an English port, to work his cargo on Easter Monday, his crew refusing to do so on account of it being a holiday? If the merchant employ hands to do the ship's work, can he compel payment for so doing?—Although the Banks were closed on Easter Monday, the day was not observed as a general public holiday by statute, and the Custom Houses, and other departments, were open as usual, and business conducted. The refusal of the crew to work would not authorise a merchant to send men on board a ship to discharge cargo, without the consent of the master, and an agreement also as to payment, or to charge the expenses for labour. If the ship does not give despatch, according to the usage of the port, the owner may be sued for detention of the goods.

PROPORTIONS OF SALVAGE MONEY.—What salvage money are the officers and crew of a steamer entitled to, for towing another steamer disabled into a port for a certain amount, as arranged between the respective captains?—In the proportions of 10-90ths to the ship; 7-30ths to the master; and 13-90ths for division among the crew, according to the scale of Admiralty awards in similar cases.

SALT.—A vessel, carrying about 180 tons, was chartered to load salt, at Gloucester, for the Baltic. The charter says:—"The vessel to be loaded with all possible despatch." How many days can the merchant claim for loading the ship?—Where no lay-days are mentioned, usual despatch is implied. On charter-parties forwarded to us, and in letters published in our columns from time to time, 30 tons per day is an ordinary quantity stipulated for in loading of salt. The time should be computed at this rate per clear working day, and notice then be given of ship being on demurrage.

SHIP'S LIGHTS.—Are small vessels, say under 20 tons, compelled to carry side lights, together with side boards and screens, of the same size as a vessel of 2,000 tons. Small vessels cannot carry lamps of this size, and the size of the side boards would be large enough to stop a vessel's way while on the wind?—Art. 6 of the Regulations enacts, that in the case of small vessels during bad weather, when "the red and green lights cannot be fixed," the lights are to be kept on deck on their respective sides of the vessel ready for instant exhibition, and shall, on the approach of other vessels be exhibited on their respective sides in sufficient time to prevent collision. So long, therefore, as it is impossible to fix the red and green shaded lights in their places, they need not, and, of course, could not, be exhibited; but the wicks in the lamps have to be kept lighted, and the lanterns containing them ready for use. The smaller the objects on the horizon, the more conspicuous and elevated should be the lights to mark their position. By Art. 9, fishing vessels and open boats may carry one lanthorn with a green slide on one side and a red slide on the other side ready for instant exhibition, in lieu of side lights.

STEAM PIPES ON BOARD SHIP.—Several steamers, built a few years ago, were fitted with steam pipes under the deck, for the use of cranes, winches, &c. A steamer of the above description loads a cargo of grain, and the said steam pipes were thoroughly examined and well tested previous to loading. On the passage the steamer experienced very bad weather, and strained the joints of the steam pipe connected with the deck, causing a leakage of the steam, and thereby damage to cargo. Is the steamer liable for this damage, or must the merchant bear the loss, as one of the accidents incidental to navigation?—Damage to cargo from leakage of steam has been held to give a valid claim for com-

persation. It would be for a Court to determine whether the damage referred to arose from perils of the sea, or from want of proper packing and casing of the pipes. An owner is not responsible for damage to cargo from perils of the sea, which may be insured against, but he is liable for neglect, or the failure to take suitable precautions for the safety of the goods intrusted to his care.

TOWAGE.—When a steamboat engages to tow a vessel, for a certain remuneration, from one point to another, she does not warrant that she will be able to do so, and will do so, under all circumstances and at all hazards; but she does engage that she will use her best endeavours for that purpose, and will bring to the task competent skill, and such a crew, tackle and equipments, as are reasonably to be expected in a vessel of her class. She does not become relieved from her obligations because unforeseen difficulties occur in the completion of her task; or, because the performance of the task is interrupted, or cannot be completed, in the mode in which it was originally intended, as by the breaking of the ship's hawser. (*The Minchaha*: Judicial Committee of the Privy Council, *Shipping and Mercantile Gazette*, August, 1861.) If, therefore, a tug so engaged returns to the ship, and proffers her services to complete the contract, the towage money is due.

TUG SERVICE.—When a tug is detained waiting upon a ship, and is thus precluded from taking another engagement, her owner can claim for the loss of time, whatever that may amount to.

BOARD OF TRADE INQUIRIES AT HOME.

1. *Queen of the Thames*, of London, stranded near the Cape of Good Hope, 18th March, 1871. Inquiry ordered June 2nd, 1871. Mandamus granted by the Court of Queen's Bench. Inquiry held from 6th to 17th May, 1872, at Greenwich, before D. Maude, Esq., S.M., with Captains Harris and Toynbee, N.A. Master found guilty of gross acts of misconduct and culpability. Certificate suspended for twelve months.

28. *Amazon*, of Liverpool, boiler burst and four men killed, at Bordeaux, on the 30th January. Inquiry ordered 4th March. Proceedings have been abandoned.

26. A whale boat capsized, and two coastguard men drowned, on going out in answer to signals of distress from the *Rival* and *Messenger*. Inquiry ordered 21st March. Proceedings pending.

30. *Yatala*, of London, stranded near Boulogne, 28th March. Inquiry ordered 5th April, and held at Greenwich on the 2nd and 3rd May, before J. H. Patteson, Esq., J.P., with Captains Harris and Hight, N.A. Default of master, vessel negligently navigated after entering the English Channel. Certificate suspended for six months.

82. *St. Oswin*, of Newcastle, stranded at St. Stefano Point, Sea of Marmora, 2nd March. Inquiry ordered 12th April, but subsequently abandoned.

83. *Isabella*, of Montrose, abandoned 80 miles east of Montrose, 11th March. Inquiry ordered 26th April, and held at Dundee on the 10th and 11th May, before J. Yeatman and W. Thorns, Esqs., J.P., with H. D. Beach, R.N., N.A. Default of master and mate, there being no sufficient cause for the abandonment. Master's certificate suspended for twelve months, the mate's for six months.

INQUIRIES ABROAD.

23. *Sussex*, of London, stranded on the Caranja Shoal, 11th January. Inquiry held at Bombay, before J. Connon, Esq., J.P., and F. Blackmore, Esq., surveyor to Messrs. Remington and Co. Master not blamed. Pilot was deserving of censure, and was reduced in the list of pilots.

24. *Denmark*, of Liverpool, abandoned to the westward of Bermuda, 3rd March. Inquiry held at Bermuda, before the Hon. E. Harvey, M. A. M. Frith, and W. C. J. Hyland, Esqs., J.P.; H. G. Hunt, Esq., Lighthouse Commissioner, and Lieutenant W. R. Martin, R.N., N.A. The court were unable to arrive at any decision.

25. *Kate*, of Sydney, stranded at Cape St. James, on the 6th March. Inquiry held at Saigon, before J. G. Caswell, Esq., Consul, D. Waterson, Esq., Marine Surveyor, T. Oats, master of *Northfleet*, and W. Whereat, master of *Matilda Atheling*. Vessel lost through error of judgment on part of master. Certificate suspended for three months.

26. *Valparaiso*, of Liverpool, stranded on Lagaitya Island, on the 20th February. Inquiry held at Valparaiso, before J. de O. D. Hay, Esq., H.B.M. Consul, Lieutenants P. B. Aitkens, R.N., and H. Husband, R.N., and J. Gray, master of the *Scottish Maid*. Want of judgment and precaution on part of master. Certificate suspended for six months.

27. *Bogota*, of Liverpool, stranded on the reef off Trarada Point, on the 23rd February. Inquiry held at Valparaiso, before J. de O. D. Hay, Esq., H.B.M. Consul, Lieutenants P. B. Aitkens, R.N., and H. Husband, R.N., and J. Gray, master of the *Scottish Maid*. Master exonerated. Ship lost under unavoidable circumstances.

28. *Chu Kiang*, of London, stranded on rocks off Reef Island, on the 6th February. Inquiry held at Victoria, Hong Kong, before the Hon. C. May, Magistrate, R. H. Cairns, Esq., Acting Harbour Master, J. McDonald, Esq., J.P., W. M. Gillson, and W. H. G. Hockin, masters, Mercantile Marine. Default of master. Certificate suspended for six months. Master reprimanded for his manner of keeping log.

29. *Ahuriri*, of Dunedin, New Zealand, stranded at Tunai Point,

east coast of Otago, on the 22nd November, 1871. Inquiry held at Dunedin, before W. N. Watt, Esq., J.P. Master exonerated.

30. *Marian Ridley*, of St. John's, Newfoundland, stranded 3rd March. Inquiry held at Barbados, before F. F. Pilgrim, C. W. Fleming, F. B. Smith, Esqs., J.P.'s., and Lieut, H. F. Yealman, R.N. Master had not a certificate. He was censured for extreme carelessness and temerity.

ROYAL NAVY AND ROYAL NAVAL RESERVE.

Abbreviations.—Ad., Admiral; A., Assistant; C., Captain; Cr., Commander; C., Chief; Cl., Clerk; Ch., 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.

PROMOTIONS.—**Ad.**—Geo. G. Randolph, C.B., 1854; Lord John Hay, C.B., 1854. **Cr.**—Cæsar H. Hawkins, 1864; Hector B. Stewart, 1868; Archibald L. Douglas, 1862. **St. Cr.**—George Stanley, 1861; John C. Richards, 1861. **L.**—William N. Madan, 1868; Robert L. Groome, 1868; William H. Roberts, 1868; Gerald C. Langley, 1868; Edward W. Hodgkinson, 1868; Lord William B. Phipps, 1868; Charles Gregory Gardiner, 1868; Chester Jones, 1868; Hon. Francis R. Sandilands, 1868; Colin H. Edyc, 1868; John Ferris, 1868; Graham J. Bower, 1868; Herbert C. Sayce, 1868; Henry J. Oldfield, 1868; Sydney A. Holt, 1868; George S. Deverel, 1868; Henry H. Dyke, 1868; John S. L. Long, 1868; Charles Gardner, 1868; Edward H. Clarke, 1868; Charles E. Grissell, 1868; John H. Henderson, 1868; Arthur C. Clarke, 1868; Calverley T. Bewick, 1868; Owen H. H. Bentley, 1868; Thomas H. Simpkins, 1868; John Durnford, 1868; Henry C. Carre, 1868; William A. More, 1868; Richard W. White, 1868; George L. W. Adair, 1868; John A. Home, 1868; William G. Eden, 1870. **N. L.**—George S. Ralph, 1866; Frederick Hive, 1866. **C.E.**—Thomas Crossman, 1861; John Taylor (a), 1861; Henderson Leslie, 1861. **I. G. of H. and F.**—Dr. John M. Minter, 1859. **D. I. of H. and F.**—Dr. James Jenkins, C.B., 1864. **St. Sn.**—Marmaduke P. S. Ward, 1867; Francis Y. Toms, 1857. **P.**—B. Westcott, 1860; John C. Plow, 1816.

APPOINTMENTS.—**A.**—Sir Francis Leopold McClintock, F.R.S. as Admiral Superintendent at Ports-mouth; F. Beauchamp P. Seymour to be a Lord of the Admiralty; Frederic A. Campbell, 1870, to command Detached Squadron; Reginald J. J. G. Macdonald, 1870, to be second in command of Channel Squadron. **C.**—Henry B. Woolcombe, 1866, to *Thalia*; John E. Montgomerie, 1862, to *Resistance*; John C. Soady, 1869, to *Pallas*; Edward Madden, 1865, to *Endymion*; William B. Grant, 1867, to *Simoon*; Robert Hall, C.B., A.D.C., 1855, to be Naval Secretary to the Admiralty; Henry D. Hickley, 1864, to *Hotspur*;

Walter J. Grubbe, 1866, to *Tamar*; Henry F. Cleveland, 1867, to *Lord Clyde*, (acting). **Cr.**—William G. Silverlock, 1865, to *Swallow*; Archibald G. Bogle, 1865, to *Woodlark*; William J. L. Wharton, 1872, to *Shearwater*; Archer J. W. Musgrave, 1870, to *Endymion*; William H. Goold, 1867, to *Durham*; D'Arcy A Denny, 1868, to *Dart*. **St. Cr.**—Edward C. T. Youel, 1865, to *Salamander*, in command; Frederic Townsend, 1871, to *Northumberland*; John C. Richards, 1872, to *Fisgard*, for service in Hydrographic Department. **L.**—Charles Q. G. Craufurd, 1871; Edward A. Holbeck, 1869; Frank E. Hudson, 1867, and James B. Young, 1872, to *Excellent*, additional; Reginald C. Townshend, 1866; Charles J. Norcock, 1871; and John A. H. Trotter, 1861, to *Cambridge*, additional; William H. Lewin, 1866, and Frederick A. Moysey, 1867, to *Thalia*; Henry N. Alleyne, 1867, to *Swallow*; Charles W. Jones, 1865, to *Royal Adelaide*; Lawrence Ching, 1868; Alfred W. Warry, 1868; Hon. Walter H. Jolliff, 1867; and Butler J. S. O. Carter, 1870, to *Pallas*; Francis H. Keyser, 1866, to *Swallow*; Edward B. Boyle, 1866, to *Pallas*; John S. Halifax, 1869, to *Woodlark*; John W. Ramsay, 1867, to *Excellent*; Lewis A. Beaumont, 1867, to *Excellent*; Hon. Frederic C. Lascelles, 1870, to *Thalia*; Charles D. J. Odevaine, 1855, to *Achilles*, for Coast Guard; George H. B. Reed, 1868, to *Castor*, for *Bullfrog*; Charles R. C. Hamilton, 1865, to *Favourite*, for *Erne*; Charles A. Crespin, 1866; and Raymond B. Needham, 1867, to *Northumberland*; William H. May, 1871, to *Hercules*; Arthur P. Douglass, 1866, to *Audacious*; Alfred Anderson, 1868, to *Favourite*; Robert C. Jolliffe, 1866, to *Pembroke*. Harry L. Ryder, 1867, to *Britannia*; Norman L. H. Clark, 1869, to *Tamar*; George H. Heneage, 1862; Francis J. Elliott, 1865; Joseph W. Wilkins, 1867; and Willoughby E. Still, 1871, to *Endymion*; Count Edmund Batthyány, Royal Naval Reserve (*Honorary*); Charles E. Reade, 1868, to *Excellent*; Yarborough F. H. Parker, 1866, and Oswald P. Tudor, 1866, to *Excellent*; James L. Hammet, 1869, to *Endymion*; Edward A. Fryer, 1871, to *Simoon*; Malcolm McNeile, 1865, to *Cambridge*; Henry A. Monteith, 1868, to *Hector*. **N. L.**—Alfred Hackman, 1869, to *Thalia*; Charles H. C. Langdon, 1867, to *Shearwater*; John G. Boulton, 1868, to *Royal Alfred*, for Surveying Service; Jesse Dixon, 1865, to *Dasher*; Edgar C. Baker, 1870, to *Royal Alfred*, additional; William B. Goldsmith, 1862, to *Malabar*; John Phillips, 1861, to *Sultan*; John Aylen, 1867, to *Valorous*. **S. L.**—Charles W. G. Spring, to *Ariadne*; Lord George G. Campbell, Henry D. Mackenzie, and Walter B. Almack, to *Pallas*; Somerset A. Hungerford, Peers E. Warburton, and Edward R. Brietzcke, to *Thalia*; William H. Pigott, Philip A. Parson, Edward J. Murdock, and Herbert Heyland, to *Northumberland*; Robert M. A. Sparrow, to *Royal*

Alfred; Robert T. Wood, Reginald A. Stock, John F. Hayes, and Edward H. Clarke, to *Endymion*; Arthur H. O. P. Lowe, to *Ariadne*; John C. P. Walcot, and James P. O'Neill, to *Sultan*, additional; Stephen H. Thompson, and Alexander M. Cramsie, to *Royal Alfred*; Leonard C. Strachey, to *Zealous*, additional; Clement Royds, to *Hercules*, supernumerary; Stephen H. Thompson and Alexander McCrombie, to *Royal Alfred*; Francis E. Ramsden, and Richmond F. Powell, to *Ganges*, for service in *Liberty*; George M. Mansel, and Reginald A. B. Carey Brenton, to *Impregnable*, for service in *Squirrel*; Tristram H. B. Beresford, and Sydney A. Roberts, to *Boscawen* for service in *Racer*; David L. Dickson, and John P. Pipon, to *Implacable*, for service in *Sealark*; William H. C. Chamberlain, and Thomas E. Cochrane, to *St. Vincent*, for service in *Martin*; Francis R. Pelly, Thomas C. Fenton, and Charles Streeten, to *Northumberland*; Arthur W. B. Kirwan, to *Dart*; James J. H. Barry, and Bernard Du Sautory to Royal Naval Reserve. **N. S. L.**—George S. Ralph, to *Pallas*; Gerard J. Napier, to *Thalia*; Charles E. Drake, to *Philomel*; Charles H. S. Douglas, to *Dart*; Duncan A. Richmond, to *Royal Alfred*, additional; Henry Donegan, Edmond E. Greaves, and Henry C. Roche, to *Iron Duke*, for *Disposal*. **M.**—Edward J. Hill, to *Dane*; Arthur Evans, Arthur H. Holland, and Joseph Milner, to *Royal Alfred*, as supernumeraries; James G. Bremer, 1868; Arthur H. C. Galloway, Herbert A. Warren, and Herries T. Douglas, to *Pallas*; Thomas B. Triggs, to *Thalia*; Thomas H. Fisher, to *Pallas*; C. G. F. Boothby, Henry C. H. Halbert, and James H. T. Burke, to *Thalia*; Charles F. M. Somerset, Henry W. Target, Edward R. B. Stephens, and Charles H. Cross, to *Northumberland*; Erasmus D. St. A. Ommanney, to *Pallas*, as supernumerary; Frederic G. M'Kinstry, to *Royal Alfred*, as supernumerary; Angus W. L. Douglas, Charles H. Dare, and Collingwood N. Fenwick, to *Agincourt*, supernumeraries; Thomas A. L. Knight, Arthur B. C. Forsyth, and James Cuddy, to *Endymion*; Frederick G. C. Langdon, and Francis A. A. G. Tate, to *Bellerophon*, as supernumeraries; John L. Eagles, to *Minotaur*, as supernumerary; Harold Charrington, to *Zealous*, supernumerary. Francis J. O. Thomas, to *Minotaur*; William S. Rees, to *Bellerophon*; Perry M. Scott, and James de V. Allen, to *Hercules*; **N. M.**—John F. Mills, to *Pallas*. **C. E.**—William F. Inness, 1867, to *Thalia*; Edwin J. Pearce, 1871, to *Salamis*; Thomas Lumley, 1862, to *Adventure*; Robert Moore, 1858, to *Black Prince*; Thomas S. Nunn, 1867, to *For*; Frederic J. Pope, 1855, to *Achilles*; Joseph Williams, 1859, to *Vanguard*; Simon Matthews, 1864, to *Mersey*; Matthew Kidd, 1858, to *Sultan*; Samuel Clements, 1858, to *Sultan*; Owen Jones, 1858, to *Swiftsure*. **E.**—George Whitting, 1866; Angus M'Intyre, 1867; and Alexander Wilson, 1868, to *Pallas*; John Walsh, 1862, to *Pembroke*

for *Fidget*; William Castle, 1862, to *Woodlark*; James Hird, 1863, to *Audacious*; Thomas Scott, (a), 1865, to *Staunch*; William Wallace, 1867, to *Pembroke* for *Glatton*; Benjamin Taylor, 1868, to *Dapper*; William Harvey, 1869, to *Pylades*; Thomas G. Woodfield, 1868, to *Resistance*, additional; John Ferguson, (a), 1862, and Robert Pattison, 1868, to *Dart*; George Ball, 1870, to *Iron Duke*, additional; James Melrose, 1868; William Oates, 1871; Francis Andrew, 1868; Joseph Brand, 1870; and George J. Fraser, 1871, to *Swiftsure*. **A. E.**—1st class.—John T. H. Denny, 1871, and George Rigler, 1872, to *Iron Duke*, additional.—2nd class.—Thomas New, 1871, to *Dart*; Samuel J. Bond, (acting), 1871; Caleb J. North, 1871, and William H. Grieve, 1871, to *Iron Duke*, additional. **Cn.**—Rev. William R. MacIlwaine, 1866, to *Pembroke*. **N. Inst.**—George Wickham. **Sn.**—John C. Messer, M.D., 1861, to *Implacable*; John M. Hunter, M.D., 1870, and Charles J. Fennell, 1871, to *Duke of Wellington*, additional; William Patallo, M.D., 1871, to *Audacious*; John B. Nicoll, M.D., 1871, to *Asia*; **St. Sn.**—George F. Banks, 1871, to *Duke of Wellington*; Charles M'Shane, 1865, to *Minotaur*; William Fasken, M.D., 1866, to Portsmouth Dockyard. **Sn.**—William J. Hamilton, M.D., 1858, to *Tamar*; Edward T. Mortimer, 1862, to *Pallas*; Richard L. B. Head, 1864, to *Thalia*; Patrick Keelan, 1870, to *Ganges*; Samuel Grose, 1870, to *Excellent*. **A. Sn.**—Frederic W. Laslett, 1870, to *Pallas*; Isaac H. Anderson, 1871, M.D., to *Northumberland*; Charles A. Rathbone, M.D., 1871, to *Thalia*; John Lyon, M.D., 1871, to *Swallow*; William C. Sandys, 1871, to *Royal Adelaide*; Joseph Halpin, 1859, to *St. Vincent*; William J. Inman, 1861, to *Britannia*; Henry Clerke, 1868, to *Black Prince*; Anthony Gorham, M.D., 1867, to *Black Prince*, additional; John T. Comerford, M.D., 1863, to *Hector*; Alexander G. Bain, 1867, to *Midge*; Alexander W. Flood, to *Woodlark*; George E. Farr, to *Dart*; **P.**—Isaac W. R. B. Galsworthy, 1864, to *Pallas*; Alfred Whiffin, 1864, to *Thalia*; Richard Curgenven, 1852, to *Brilliant*; William C. P. Grant, 1847, to *Excellent*; Benjamin Luxmoore, 1856, to *Hibernia*; George H. L. Wise, 1849, to *Lord Warden*; George Grandilier, 1858, to *Favourite*; James W. Lishman, 1868, to *Vanguard*. **A. P.**—Charles Farwell, 1867, to *Thalia*; John N. Colborne, 1861, to *Salamander*, in charge; Frederic A. Smith, 1865, to *Vanguard*; Frederic B. Williams, 1861, to *President*; Edward Theakston, 1861, to *Pembroke*; Thomas Guard, 1870, to *Valorous*; Harry Wilton Minty, 1869, to *Royal Adelaide*; Edmund Hickson, 1870, to *Penelope*; Edward Lander, 1868, to *Aurora*; Berners H. E. Drayson, 1865, to *Dart*, in charge; Joseph F. E. Hill, 1869, and George B. Collier, 1869, to *Glasgow*; Francis M. Steele, 1866, to *Sphinx*, additional for disposal; John W. Secombe, 1865, to *Flora*; Thomas W. Browne, 1866, to *Pembroke*. **Cl.**—Thomas W. A. West, to *Pallas*. **A. Cl.**—William W. Bradden, to *Pallas*.

RETIREMENTS.—**Ad.**—William J. C. Clifford, C.B., 1871. **C.**—Hon. Armer L. Corry, 1866. **St. C.**—Edward K. Calver, 1870, as Captain. **Cr.**—Hugh Davis, 1868. **St. Cr.**—John Richards, 1863, as Captain; Francis Peel, 1855, as Captain. **L.**—Henry Bridger, 1865; Arthur L. Clarkson, 1863, as Commander; John H. Lee, 1869. **C. E.**—John T. Obree, 1860; William Laird, 1867; Reginald G. Drew, 1871; James H. P. Chowne, 1872; Somerset J. Johnstone, 1871; Thomas Ramsbottom, 1866; Charles W. F. Craufurd, 1871; Eustace F. Grove, 1872; James Beddingfield, 1867; Charles R. K. Smyth, 1859, as *Commander*. **N. L.**—Henry W. C. Wise, 1862. **S. L.**—Herbert K. Heyland, 1869. **C. E.**—James Coope, 1858. **Cn.**—Rev. William W. Campbell, 1858. **N. Inst.**—William D. Hay, 1855. **Sn.**—Thomas Jameson, M.D., 1869. **A. P.**—Bartholomew S. Tobin, 1867; Charles Kendall, 1869; John Hamilton, 1869; Arthur M. Wade, 1861; Arthur T. Claydon, 1869; Alfred Postance, 1868; Henry D. King, 1868. **St. Sn.**—John I. Acheson, 1861.

DEATHS.—**Ad.**—William B. Dobson, 1867, *r.*; William Slaughter, K.H., 1868, *r.*; William Croft, 1857; George Augustus Elliott, 1869, *r.* **R. A.**—James F. B. Wainwright, 1869; Thomas E. L. Moore, 1867; **C.**—Pownall W. Pellew, 1870, *r.*; Frank K. Hawkins, 1871, *r.*; Willoughby Lake, 1856, *r.*; Henry J. Grant, 1870, *r.*; John R. Aylen, 1870, *r.*; Henry L. Cox, 1866, *r.*; Charles E. H. Vernon, 1861, *r.* **Cr.**—John Mee, 1870, *r.*; William H. Martin, 1864, *r.*; George Tyrell, 1864, *r.*; Joseph T. Strong, 1862, *r.* **S. C.**—John Burdwood, 1863, *r.* **L.**—John N. Mercer, 1867. **S. L.**—Edward Strickland. **Sn.**—Joseph A. N. Harvey, M.D., 1856, *r.*

LIGHTHOUSE ON THE CORBIERE.—The Jersey States are contemplating the erection of a Lighthouse on the Corbiere Rocks, a dangerous reef running out a considerable distance from the south-west corner of the island, in the direct track of vessels making for St. Helier. Being covered for a considerable distance at all times of the tide, they form a formidable obstacle to the Navigation at night-time, there being nothing to point out their locality. The mail steamers are frequently obliged to remain at Guernsey all night in the winter season, when they arrive there at a late hour, to avoid the risk of the dangerous Corbiere. A long correspondence passed between the Trinity Board and the States some few years ago on the subject of erecting a Lighthouse, but a difficulty arose on the question of charging Light Dues on vessels coming to the island. This was opposed by the States Committee intrusted with the correspondence, and the matter was allowed to remain in abeyance. It has been revived of late, and on Wednesday Deputy Westaway pressed the States to commit themselves at once to the undertaking in the interests of humanity and of Commerce. After a brisk discussion the subject was adjourned for a fortnight.

TRAINING SHIPS.—At the last conference of the Associated Chambers of Commerce, Mr. Sampson S. Lloyd presiding, the Plymouth Chamber sent up a report directing attention to the subject of training ships for the merchant service. It was stated that able-bodied seamen were rapidly decreasing in number, and their places being supplied by inexperienced men and foreigners. The report suggested the establishment of additional training ships, and that the Government should be requested to give ships of the line for the purpose, and fit them up so that they might be certified under the Industrial Schools Act. The report was unanimously adopted, and the committee was directed to take the necessary steps to carry out the proposition.

WHISTLES.—During some thick fogs met by the Channel Squadron off the coast of Portugal in 1870, many endeavours were made to get a useful sound out of the fog-horns—wretched steam whistles which are generally supplied to steam ships—with small success, until Captain May, of H.M.S. *Northumberland*, thought of pumping air into his steam launches' boiler, and attaching his fog horn to it in the place of the steam whistle. He obtained a clear penetrating note which was heard distinctly above all the other sounds made by horn or whistle by the rest of the ships of the fleet.

COMPULSORY PILOTAGE AND KEEPING THE WRONG SIDE IN CHANNELS.—The feeling in Liverpool, and indeed in almost every port of the United Kingdom, in favour of abolishing compulsory pilotage, is gaining ground every day. So also is the feeling that there ought to be a compulsory rule that ships navigating narrow channels should be required by law to keep to the starboard side of the fairway. What on account of the absence of such a rule, and with the present irresponsible position of compulsory pilots, Liverpool bids fair to become a close port soon. The narrow channels leading to the port are industriously and successfully being filled up with ships of 3,000 or 4,000 tons gross. Some day, shipowners may agree that it will be better to allow a competent master to navigate his own ship, with assistance of a pilot, if he requires it; and some day, also, the Board of Trade may act on the wishes of all competent authorities—wishes repeatedly expressed—and propose and enforce a rule that steam ships going down a narrow channel shall keep on one side of the fairway, and steam ships going up shall keep on the other side. The only thing against the chances of allowing a competent master to navigate his own ship, supplemented by the assistance of a pilot, if necessary, or of making a rule that ships in narrow places shall keep to the right, is, although both proposals contain in themselves the germs of much common sense; that common sense is nowhere compared with vested interest and the immobility of authorities.

BILGE WATER INDICATOR.—We have had our attention called to a very valuable and ingenious contrivance, invented in the United States, and intended to give warning, not only of the presence, but also of the quantity of water in ships. It has a dial like an aneroid barometer, and is intended to hang in the captain's cabin. From the testimonials we have seen of its actual working, we have every reason to believe it to be a success. It is about to be fitted on board the German Lloyd's ships. Our readers will be able to obtain particulars from A. Strauss, 14, Basinghall Street, E.C.

STEERING SIGNALS.—We have received the following from Mr. Robert P. J. Simpson, Superintendent of Pilotage at the Port of Liverpool. Mr. Simpson's object is to facilitate navigation in narrow channels and crowded anchorages, and to lessen the risks of collision generally. He proposes that the signals shall be made with a steamer's whistle, and with the fog-horn of a sailing vessel. The system would be available in fog, but the principal use of the signals would be as ordinary day and night signals:—

SIGNALS.	SIGNIFICATION.
● One Short Sound.	<i>I am going ahead with my helm a-port.</i>
●● Two Short Sounds.	<i>I am going ahead with my helm a-starboard.</i>
●●● Three Short Sounds.	<i>I am going ahead with my helm amidships.</i>
—● One Long Sound, one Short Sound.	(STEAMERS) <i>I am going astern.</i> (SAILING VESSELS) <i>I am all aback.</i>
—●● One Long Sound, two Short Sounds.	(STEAMERS) <i>My Engines are stopped.</i> (SAILING VESSELS) <i>I am hove to.</i>

To know what another vessel is doing, tell her first what you are doing yourself. Repeat signals as often as may be necessary. Answer promptly. (We think that this is a valuable suggestion, and we do not see why the system could not be carried so far as to enable a ship by means of a fog horn or whistle, to make the whole of the Commercial International Code Signals. An improvement in the wheezy things mis-called whistles, will, no doubt, go hand in hand with the adoption of any phonic signals. In our columns, elsewhere, will be found a suggestion on this subject also.)

ROYAL NAVAL RESERVE.—The Committee of Management of the training ship *Conway*, stationed in the Mersey, have applied to the Admiralty to have the boys on that ship placed in the Reserve as midshipmen. We have every reason to hope that this suggestion will be acceded to. These boys are to be the future officers of the Mercantile Marine of Britain, and ought in their early life to be associated with such an honourable and loyal body as the Naval Reserve. The application does great credit to the staunch spirit of Mr. Beazley, and the rest of the Committee, and we trust the *Worcester* will not be behind hand in making a similar application. We also trust that all training ships in which boys who bid fair to become big enough, and strong enough to work the present heavy guns, will make application to have their crews enrolled as seamen or boys of the Reserve. We must depend on our Reserves in any future war, and to neglect the boys is to neglect the most important part of Mr. Cardwell's unjustly neglected Naval Reserve scheme.—(*Liverpool Correspondent.*)

ANSWERS TO CORRESPONDENTS.

F. W. WYMER, GLASGOW.—Your proposals as to arranging the lights of steam ships are not new, and are not possible: a reference to the *Journal of the United Service Institution* will prove this to you. We are much obliged for your courtesy in sending us your paper, which the calls on our space prevent us from inserting.

J. W. J. HARVEY, BRISTOL.—There is nothing new in your double-beat safety valves. They have been passed before, and will, doubtless, be again, if properly constructed and in working order.

E. W. M. WOOLSTON, SOUTHAMPTON.—Thanks, but we do not believe in bricks and mortar for old seamen. We think that more good will be done by pensions, and a system of boarding out: as the expense of the building would be saved, and added to the pension.

VIBRIOS, E. M., BIRMINGHAM.—The article on "Small Black Vibrios" was not written by Dr. Calvert, but by the Editor.

W. COWLEY, DUFF STREET, EAST INDIA ROAD.—We are obliged by your offer, but we have no space available. We must, therefore, decline with thanks.

CHAS. F. FULLER.—Much obliged for your letter. The subject is under the consideration of the Admiralty.

GREEN VALLEY.—Your letter on the "Classification of Ships in Lloyds' Register" will be printed at an early opportunity. The tabular matter it contains prevented insertion this month.

MR. MCCOOL'S AND "AN OLD SALT'S" communications have been received. Attention will be given to them in our next.

THE
NAUTICAL MAGAZINE.

NEW SERIES.

JULY, 1872.

THE RELIGION OF SAILORS.

SAILORS are not, in outward show and profession, a religious class of men, nor is the religion which some of them avow and profess characterised by the same superstition as formerly; at any rate, they are not quite so frequent and absurd. Still there are traces of it among them just as among all other classes of society, especially at those frequent intervals of life when fancy is more active than reason and judgment, and when wonders very doubtfully attested are held to be more religiously suggestive than facts that can be proved. Even men of some education are apt to mistake a coincidence for a connexion, to confound sequence with consequence, and to assert supernatural cause or supernatural effect upon evidence which proves nothing but that certain events, common or strange, happened one after the other, or simultaneously. If such is the case amongst those who might be expected to know better, one cannot be surprised that superstition should linger in the minds of sailors who, for the most part, have had but little logical training, and frequently no intellectual training whatever. Even if they were a more thoughtful and intelligent class of men, a little superstition might well be excused when found as an ingredient in their religion; for if they have travelled far and often, they must undoubtedly have seen many wonderful and awful things not easily explained away by the small amount of scientific information at their command. They see nature upon a large scale and under extraordinary circumstances. In certain

electrical states of the air and sea they witness strange grouping of phenomena, hear strange sounds, and feel strange influences, and hence in men of their small culture an occasional tendency to forms of religious emotion, fanatic, fantastic, or wild. It is probably not very easy in the midst of a hurricane on the Atlantic to realise and be sustained by the thought that God "holdeth the waters in the hollow of his hand." To an affrighted mind it might seem as if some other description of being or beings were handling the waves at that moment, and hence a momentary perversion of the religious sentiment, an appeal, deprecatory or imploring, to some inferior spirit or spirits supposed to have a share in the power which rouses into violence and subdues into stillness the wondrous elements of air and sea. True there may be among sailors many with so thick an integument of mere animalism about their souls, that they can scarcely be said to feel anything except through the medium of sensual appetite, and who quickly obliterate any rising emotion of the spiritual kind by means of their grog; but this is not true of them as a body. With all their ignorance and occasional coarseness they are by no means a hard, impassive, insensible class of men. They are not sentimental, but they are often sensitive, and hence a capability of religious feeling which sometimes takes a sober and reasonable, and sometimes a wild and superstitious form, according to the influences to which they have been exposed in the country of their birth and the homes of their childhood. Sailors belonging to Roman Catholic countries, and thoroughly saturated with ecclesiastical teaching of the marvellous, are more prone to wild superstition than English, American, or Scandinavian sailors, who have had less training in mystical and imaginative things. They may be all admirable seamen, technically considered as such, but there must necessarily be a difference in their habits and conduct under circumstances which in any way excite the religious feelings.

All natural objects are impregnated with a divinity that stirs within them, and are intended, probably, not only to yield us the physical and material benefit we get from them, but also to express some spiritual significance—to give some religious hint or suggestion of that mysterious life from which they sprung, whether by immediate creative impulse, or by lengthened chain of causation; and the man who has no conception of this, who looks at objects on their material and utilitarian side, and no other, has cultivated only half his faculties, and is only half a man—a very useful and necessary half, no doubt, but still an incomplete and fragmentary man. Nature, through forest and field, mountain and valley, is full of sublime and tender teaching; but nowhere is she more eloquent,

in sublime suggestiveness, than at sea. The deep, earnest heavings of the waves; their mysterious sighs; their frolic dance, under calm sunlight; their irritable hissing foam, under the influence of wind, are all poetic and religious influences; and it is a pity that ladies and gentlemen, who make short voyages, in luxurious yachts or steam vessels, should almost purposely shut out this higher class of impressions, by diligently filling up every moment with some artificial amusement, and by encumbering themselves with superfluity and excess of mere sensuous pleasure. The poor, wet, sea-boy, furling the sails, and looking out upon the main, from the yards of some sailing vessel, travelling far away into new scenes and distant climes, may possibly get more natural influence out of the situation, than the luxurious traveller, in a richly appointed yacht. Whether he likes it or not, he is obliged to expose himself to the influences of the scene around him. As he listens to the solemn voices of the night, sighing, whispering, roaring, thundering, the gale shrieking through the cordage; as he sees the white foam curling over the bulwarks, and splashing upward to the very shrouds; as he becomes conscious how frail the partition between himself and a watery grave, when some unusual strain of wave or wind makes the vessel tremble, quiver and groan in every plank and beam; as he looks upward to the quiet stars, and down upon the solemn deep, a certain religious awe is very likely to creep over his spirit, and when his watch is over, he may turn into his hammock, a sadder and a wiser man. He does not give sentimental expression to his feeling; he may hardly be conscious exactly of what kind of feeling it is, whence it came, and whither it tends; he may even, in the wild vagaries of uncultivated fancy, interweave with it some ludicrous associations with a Flying Dutchman above the waves, or a Davy Jones beneath them; but, under apparent stolidity and coarseness, behind the odd and the vulgar, there is often real feeling, toned with sufficient awe to make it sacred. It is a rudimentary part of that religion which is suggested by the sea to the mind of a sailor.

The religion of English sailors, though often superstitious, has, generally, something practical in its manifestation, in hours of difficulty and danger. They trust in Providence; but they also trust in ropes, chains, shrouds, anchors, skilful steering, and other agencies, which Providence directs all earnest men to use in such circumstances. They recognise self-help as a proper accompaniment, if not an indispensable part of Divine help; and the rough, ready, unceremonious movements of a ship's crew in a storm is an eloquent illustration of natural religion in full energy and hard work. It is a religion that drops for awhile its pious words and phrases, and takes to vigorous duty; and the chaplain

of the ship, if there happen to be one, would do well to join in the rough worship, by "lending a hand," if he knows how, or by keeping out of the way, in perfect silence, if he does not. The rough boatswain, in Shakespeare's *Tempest*, is not necessarily void of religious feeling, and certainly not of good sense, when, with the proper spirit of a seaman, he stops the meddlesome talk of the Neapolitan courtier:—

"You mar our labour; keep your cabins; you do assist the storm.
 • • • • If you can command these elements to silence, and work
 the peace of the present, we will not hand a rope more; use
 your authority; if you cannot, give thanks you have lived so
 long, and make yourself ready in your cabin for the mischance of
 the hour, if it so hap. Cheerly, good hearts! Out of our way, I say."

This ship had a king on board, but it was none the safer on that account; for, as the boatswain remarked, "What care these roarers for the name of king?" and had there been besides a dozen bishops in the cabin, with all the millinery, upholstery, and mechanism of their church ready to hand, they could not in the least have helped the matter; for the thing wanted just at that moment was not the king's religion or the priest's religion, but the sailor's religion—the religion of manly effort, patient endurance, hard work, and heroic struggle, and the words of the rough boatswain (assuming that his directions were the right things to be done), "Down with the topmast! Yare! Lower, lower! Bring her to try with main course!" have, under the circumstances, as much sacred efficacy as a church canticle. And mark, moreover, the pleasant, encouraging pathos of his expression, "Cheerly, good hearts!"

The religion of English sailors has, besides its practical, its dogmatic form. It is not by any means its best aspect whether it incline to orthodoxy or heterodoxy, conformity or nonconformity. The sailor's creed, when he professes one, is generally a copy of the one inculcated on shore and at home by his pastor in church or chapel. He is not often disposed to *argue* out the postulates of his religious theory, and when he does make the attempt he is not particularly correct in his logic. Fortunately for him, however, as for other men with much greater pretensions to learning and philosophy, it happens that the mind may be honest and sincere, and the heart warm and sound, when the speculative opinions are logically indefensible, doubtful, and obscure. By a happy inconsistency we sometimes see a gentle life in connexion with a harsh creed, figs of thorns and grapes of thistles as it were; but the truth is that it is not in these instances the creed which puts forth the life, but certain spiritual instincts in the life which overrule the creed. Jack in the forecabin, when he professes any special dogma, is like all other dogmatists, sometimes better than his theory, and sometimes worse.

Religious instructors and spiritual guides to sailors are not, we fear, very well adapted to their functions generally; but there have been instances of success here and there. Many years ago there was a man who ministered somewhere near the Commercial Road in the eastern part of London, and was commonly known there as Boatswain Smith. He had a wide popularity, and we are credibly informed by those who have heard him that his influence on the whole was salutary. But the finest example of a preacher fitted for seamen was to be found in Father Taylor, the American, a man of marked originality and real genius, a born poet, whose illustrations went home because they were taken from homely things, from nature and the common life of man. Earnest and well-meaning persons are still carrying on the work of Smith and Taylor, but only with a very partial success. When they belong to the clerical order they are apt to be narrow, tied down to foregone conclusions and settled creeds inherited from their sect or church. They may be cultivated and even learned men, but seldom endowed with that broad genial humanity which makes the common people hear them gladly. If sailors are to be mentally saturated with any particular theology out of the many that have been invented by the subtle ingenuities of men, it ought to be one of the broadest, the freest, the most liberal and comprehensive that can be found. Men who travel far and wide do not live in holes and corners, either intellectually or physically. Accustomed to a wide, wide world, to scenery on a large scale, to mountains and valleys, and prairies and plains, to mighty seas and deep heavens, they are prone to acquire, even when unassisted by much culture, a certain preference for greatness and breadth in the treatment of subjects relating to intellect and spirit; and when ministers of any denomination undertake to teach religion to sailors and to men of the world who have *seen* the world, it ought to be a religion broad, beautiful and magnificent, full of natural elements, and illustrated by natural imagery. Let those who have the choice of instructors avoid above all men the presumptuous theologians, men without diffidence or modesty of intellect, who are dictatorial, authoritative, and positive in relation to subjects that should be approached in deep humility of mind, and carefully put forth in the most modest forms of expression. Unfortunately for the world it is still infested by a few spiritual teachers who presume to know and say much about the nature of God before they have gained even an elementary knowledge of the nature of man, who profess a reverence and rapture for the things which they have *not* seen before they have developed any healthy sensibility to the beauty and moral significance of the things which they have seen.

Simultaneously with the awakening and cherishing of a religious life which shall sustain and comfort the mariner at sea, it were much to be desired to see him under some restraint and prudential guidance in his life ashore. What with the harpies and the harlots of Ratcliff Highway, and other places of that kind in London, Portsmouth, Plymouth, and Liverpool; what with the incessant activity of influence upon him of the coarsest sensual temptations, the grog-shop, the penny gaff, the dancing saloons in low public-houses, where "Black-eyed Susans," and "Mollys," of "Wapping Old Stairs," haunt him with demoniacal fascination, poor Jack is apt to be turned inside out, both in character and purse, within a week of his coming ashore. With respect to these things, there is a discernible improvement in his habits of life of late years, and benevolent and judicious men are worthily occupied, through the agency of Sailors' Homes, Clubs, Institutes, Depôts, and places of that kind, in endeavouring to improve his habits still further. A great deal, however, yet remains to be done. Many a Trinity Pilot taking a ship from London to the Downs, or Dungeness, has reason to complain that just at the time and place where he has need of a sober, steady, active crew, he has a crowd of unmanageable sots, staring and stupid, only half-awakened from the effect of their dissipated saturnalia on shore. Ultimately, however, they wake up, and recover something approaching to a right mind. As they leave behind the town and its temptations, and glide down the river into open sea, nature begins to act upon them with salutary spell. The horizon widens, the world grows large and awful; the winds blow, and the waters roll; the sun goes down, and the stars come out in spiritual splendour; a religious influence creeps over the mind of the poor mariner, sometimes with only momentary, but sometimes with abiding power; and when the time comes for his evening rest, it may be, that ere he sinks into slumber, he feels some regret at his past folly—some humiliating sense of his present weakness—some vague yearning for light and love, for purer tastes and desires; and though all this may not be expressed in the language of catechism, prayer-book, or tract, or may not even be clothed in any words at all, yet it is veritably the working of a healthy, religious sentiment, a whispering of the angels, as it were, bidding the poor prodigal to arise and go to his Father. Of course, these angel voices, if there are such, are intended for the comfort and instruction of all men, and not for sailors exclusively; but they are best heard, and most impressively felt, in a wide, silent horizon, and in the presence of vastness, sublimity and awe; in such scenes as a mariner becomes familiar with more frequently than other men. The influence is vague; it is "of such stuff as dreams

are made of;" nevertheless, all beautiful and effective religions have had this mystic element as one of their component parts, and no religion can be worth much that totally ignores it. When our little life comes to be rounded with its inevitable sleep, it will be found, perhaps, that not only the hard, stern realities of life, but even dreams, when touched with pathos and beauty, have had their part in discipline and instruction, and that the seemingly vague emotions of wonder, awe, terror, rapture, hope and fear, in the presence of danger; joy and delight in visions of the majestic, the beautiful, and the sweet, were all full of spiritual suggestiveness, and made helpful in the building up of true and noble character.

The vocation of the sailor is so high, so noble, so useful, so indispensable, that one is anxious to have it surrounded with all associations of honour and of public interest and regard. Not the refuse of the earth, but the very best of our vigorous youth, should be encouraged to take to the sea, as a profession, and to feel that when there, they have noble and dignified employment, even though it be before the mast, in the commonest capacity. The training of a sailor, before he goes to sea, should be such as to establish sound health, firm muscle, steady nerves, an open, free, intelligent, teachable mind. It should be practical and experimental, and to some extent, technical and scientific. The care of the sailor, when he comes back from sea, ought to be considerate, kind and indulgent, but, at the same time, judiciously repressive of those tendencies to tumultuous outbreak in mere animal pleasures, to which he is prone, on account of his long separations from town life and its social enjoyments. The religion of the sailor ought to be his own. We should prefer to see him forming his own creed, and taking care of his own soul. God and nature will help him in many mysterious ways—gentle, stern, awful, beautiful and terrible, but all beneficent in their ultimate aim. When a more liberal culture has enlarged the mind of the sailor, we shall probably find that his religion will partake of the benefit, casting off much of its superstition and absurdity, but retaining something of its mysticism and poetry. A sailor's religion, too, will always be more manifest in generous deeds than in fine words. The reverential, awe-touched attitude of his mind towards God will never paralyze his energies in rendering service to his fellow-men.

THE BRITISH CONSTITUTION AND GOVERNMENT :
 A DESCRIPTION OF THE WAY IN WHICH THE LAWS OF ENGLAND ARE
 MADE AND ADMINISTERED.

(Continued from our June Number.)

CHAPTER VII.—THE ASSEMBLING OF PARLIAMENT.

At the time appointed for the assembling of Parliament, certain Peers, generally numbering five, and including the Lord Chancellor, and other Privy Councillors, appear in the House of Lords as Lords Commissioners. They wear the robes proper to their rank, and carry white staves in their hands; but, instead of their coronets, they wear three-cornered hats, such as judges wear on State occasions. They take their places on a form placed between the Throne and the Woolsack, and so seated, represent the Sovereign. Perhaps there may be a few other Peers present, but as the proceedings of the day are somewhat formal, they would be few. Such as are present sit in the House itself, and being there as members of the Legislature, and not as Lords Commissioners, they do not wear their robes. The Commissioners having taken their seats, the Lord Chancellor informs the House that as it was not convenient for the Sovereign to attend the House in person, they had been commissioned to act in His or Her Majesty's stead. Accordingly, in virtue of that Commission, the Lord Chancellor orders the Gentleman Usher of the Black Rod to summon the Commons to the bar of the House of Lords. Black Rod goes upon his errand, and in the meantime the Lords Commissioners sit in silence.

The Commons are discovered by Black Rod without a Speaker, conversing with one another, without regard to the ordinary rules of the House, because, at this time, the House has not been fully constituted. In the first place they have no Speaker or President, and they have no power to proceed to business, until they have leave to do so from the Sovereign.

But, although there is no Speaker on the assembling of a new Parliament, the officers are there, because they are appointed by the Crown. Chief among these is the Clerk of the House of Commons, who is appointed by letters patent, and with him his two deputies. They sit in a row at the table, in front of the Speaker's chair; and at the other end of the House, by the bar, sits the Serjeant-at-Arms, also appointed by the Crown specially to wait on the House of Commons. He also has two deputies, and a number of assistants. It is his duty to apprehend and keep in custody all persons committed by the House. He has to keep order, either by his own interference, or that of his subordinates, in the galleries, and the arrangements connected with the lobbies and approaches

to the House are carried out under his direction. Either he or his deputy remains in the House throughout the sitting. It is the duty of the Clerk of the House to administer the oath to each member of the House upon his first presenting himself after election, whether in the case of a new Parliament, or in the case of a casual election, to fill a vacancy; and in order that he may be properly informed at the commencement of a new Parliament as to who has been returned, the very first act done upon the assembling of a new Parliament is for the Clerk of the Crown in Chancery to deliver to the Clerk of the House of Commons a book containing a list of the names of those returned. As soon as this is done neither the Lord Chancellor, nor the Court of Chancery, nor the Sovereign, have anything to do with the composition of the House of Commons, except by direction of the House itself. From that moment it conducts its own affairs. The Crown has called it into being, and can dissolve it, but cannot interfere with its deliberations while Parliament is sitting.

On arriving at the House of Commons, Black Rod informs the Clerk that the Commissioners desire the attendance of the Commons at the bar of the House of Lords to hear the Commission read. The members, accompanied by the Clerk, immediately go to the House of Lords, and upon their arrival the Lord Chancellor directs the Reading Clerk of the House of Lords to read the Commission, which proves to be a very voluminous document, appointing the five Peers who form the Commission, and several others, who do not happen to attend, always including the Archbishop of Canterbury, and Princes of the Blood Royal being Peers, to act in behalf of the Sovereign in the matters named in the Commission. As soon as the Commission has been read, the Lord Chancellor addresses the Commons in these words:—

“Her Majesty will, as soon as the members of both Houses shall be sworn, declare the causes of her calling this Parliament; and it being necessary a Speaker of the House of Commons should be first chosen, we have it in command from Her Majesty, that you, Gentlemen of the House of Commons, repair to the place where you are to sit, and then proceed to the appointment of some proper person to be your Speaker, and that you present such person whom you shall choose here to-morrow (at an hour stated, which would probably be two o'clock), for Her Majesty's royal approbation.” This ceremony being ended, the Commons return to their own Chamber.

CHAPTER VIII.—THE SPEAKER AND HIS OFFICE.

IT is customary before the actual election of the Speaker for the Prime Minister to take counsel with other prominent members of the House

as to the most desirable member for the office, and to arrange the programme of his nomination. The arrangement come to is privately communicated to the Clerk, who, sitting in his usual place in front of the Chair, points to the member who is about to nominate the Speaker, and in this way calls upon him to address the House, without mentioning his name. The member rises and formally moves that Mr. ——— be chosen Speaker, and he prefaces his motion by stating the qualifications his nominee possesses for the office. The motion being seconded, it is put to the House by the Clerk, and is usually carried unanimously. The Speaker-Elect then acknowledges the honour done him, and is conducted to the Chair by his mover and seconder. Upon taking his seat the Serjeant-at-Arms approaches the table of the House, and places the mace upon the table, an act which signifies that the House is "made." But the Speaker is not yet fully appointed, for his election must be approved by the Crown.

The duties of the Speaker are varied and onerous. He is the spokesman of the House of Commons in all its dealings with others. He has to manage in the name of the House when counsel, witnesses, or prisoners appear at the bar ; to reprimand those who have incurred the displeasure of the House, and to offer the thanks of the House to those whom it may desire so to distinguish. When witnesses are wanted he summons them, and can compel attendance. Whenever a vacancy occurs, the Speaker, in accordance with a resolution of the House, issues the writ for the election of a new member, and when the House is not in Session he directs writs to be issued on his own authority. When a member of the House of Commons succeeds to a Peerage, for instance, the Speaker obtains cognizance of the vacancy from the Crown Office and orders a writ to be issued as a matter of course ; and on being informed of the death of a member by two others he does the same. His ordinary duty is to preside at the debates of the House of Commons, and regulate them according to the rules of the House. Should a member persevere in breaches of order, the Speaker may "name" him as it is called, a course uniformly followed by the censure of the House. In extreme cases the Speaker may order a member or other person into the custody of the Serjeant-at-Arms, who holds him prisoner until the pleasure of the House be signified. If the House take no action respecting such committals, the prisoner is liberated at the close of the Session, for the House has no power to retain anyone in custody after Parliament has been prorogued by the Crown.

Some of the duties of the Speaker as President of the House of Commons will be more properly described when we come to the proceedings in Parliament, but sufficient has been said here to show that the nature of his duties requires that he should possess many qualities

rarely found combined in one man. As controller of the House when in debate, and interpreter of the rules of the House, he must be sound in his judgment and quick in forming an opinion; he must be patient, and not hold the rein too tightly. As President of the first deliberative assembly in the world, he must maintain the dignity of his position with courtesy; he must be firm but not overbearing; and as it is in the power of the House to review his decisions, he must be above all things accurate and impartial, because a reversal of his ruling by the House would greatly diminish his influence and imperil the decorum of the House itself.

But the Speaker is not only President of the House of Commons and its mouthpiece; he also occupies a great constitutional position as the representative of the Commons of the United Kingdom before the Crown. Armed with the authority of the House of Commons, he can assert the rights of the Commons before the Sovereign and claim the free exercise of their privileges. The ceremony of approving the nomination of the Speaker-Elect is signified by the Sovereign in person or by Commission. If by Commission, which is usually the case, the Lords Commissioners take their places in the same way as before described, and send for the Commons as before. In the Commons the Speaker-Elect occupies the chair, attired in a Court dress, and what is known as a bobwig, when the doorkeeper suddenly announces the approach of the Gentleman Usher of the Black Rod, by calling with a loud voice, "Black Rod." The doors of the House are immediately closed, as they would be in the face of the Sovereign, if he presented himself during the deliberations of the House. Finding the door closed, Black Rod knocks thrice, and upon the Sergeant-at-Arms opening a little wicket in the door, he states that he has a message from the Sovereign, or the Royal Commissioners, as the case may be. He is then admitted, and advances, bowing three times, amid the silence of the members, to the table of the House. Holding up his rod of office, he states that he has come in obedience to the commands of the Sovereign to request "the attendance of this Honourable House in the House of Peers." Upon this the Speaker-Elect rises, and proceeds to the bar of the House of Lords, accompanied by the members who happen to be present. Arrived there, he and the Commons hear the Commission read, endowing the Commissioners with the Royal authority, and then he addresses the Lords Commissioners as follows: "In obedience to Her Majesty's commands, Her Majesty's faithful Commons, in the exercise of their undoubted right and privilege, have proceeded to the election of a Speaker, and, as the object of their choice, he now presents himself at your bar, and submits himself with all humility to Her Majesty's gracious appro-

bation." In reply, the Lord Chancellor assures him that Her Majesty most fully approves and confirms him as Speaker; whereupon he lays "claim, on behalf of the Commons, by humble petition to Her Majesty, to all their ancient and undoubted rights and privileges." These being confirmed, the Speaker retires from the bar of the House of Lords, and returns to the House of Commons.

CHAPTER IX.—PROCEEDINGS IN PARLIAMENT.

PERHAPS three or four days may elapse after the assembling of a new Parliament before it has authority from the Crown to proceed to the despatch of business. This interval is occupied by the ceremony of each member taking the oath and inscribing his name upon the roll of members. In the House of Lords, the Lord Chancellor is the first to write his name upon the roll, and in the House of Commons the Speaker. Formerly this oath was of such a character that Jews and others could not conscientiously subscribe to it, but within the last few years it has been made more simple, and amounts only to a promise to maintain the Constitution. This oath is taken by Peers and by every member of the House of Commons before he can vote, except in the case of the election of Speaker. Upon the assembling of a new Parliament, as many as twenty members take the oath at one time, but when Parliament is in Session a new member is conducted to the table between two other members, that he may be the better known to the House, and he bows as they go up. New Peers also are introduced by two others, all three wearing their robes.

THE SPEECH FROM THE THRONE.

Upon the day appointed for the Sovereign to announce the causes for calling the Parliament together, most of the members of both Houses have probably taken the oath and subscribed their names upon the roll, and the Sovereign's appearance in the House of Lords to give authority to Parliament to proceed to business may be taken as the actual commencement of the Session. The Sovereign may deliver the Speech in person or by Commission, and as we have described the ceremony of the King appearing by Commission, and in that manner communicating with Parliament, it will be well now to describe this, the more important ceremony, as being conducted by the Sovereign in person. It seldom happens that the King appears more than once in a Session in Parliament in person, but Queen Anne one year gave authority in person to the Commons to elect a Speaker, appeared in person to approve the choice made, and attended a third time in person to deliver the Speech.

When the Sovereign enters the House, the Peers rise in a body, and remain standing, until desired by Her Majesty to sit. The Queen sits upon the Throne, at the upper end of the House, crowned and robed, with the Lord Chancellor on her right, and members of the Royal family appropriately disposed in the neighbourhood of the Throne. The great Officers of the Household, who have to do with ceremonies, and other Ministers of the Crown, also, have their appropriate places. The Peers, wearing their robes and coronets, sit in the order of their rank: the Dukes in the front, then the Marquises, then the Viscounts, then the Earls, and, lastly, the Barons. Peeresses, in full dress, sit on the back benches, and the Bishops sit in their accustomed places, wearing their gowns, as they always do, whenever they enter the House. The galleries are filled with ladies, but the space round about the bar, which is at the end of the House, opposite the Throne, is kept clear for the Commons. As soon as every one is disposed in his proper place, the Queen commands the Gentleman Usher of the Black Rod, through the Lord Great Chamberlain, to let the Commons know, "It is Her Majesty's pleasure they attend Her immediately in this House." The Usher of the Black Rod goes upon his errand, and upon being admitted to the House of Commons, he approaches the table as before, and says:—

"Mr. Speaker, the Queen commands this Honourable House to attend Her Majesty in the House of Peers."

On withdrawing, he walks backwards, bowing as he goes, nor does he turn his back upon the House until he reaches the bar, where he awaits the approach of the Speaker. The Speaker, in his passage from the House of Commons to the House of Lords, which, in the present Palace at Westminster, is a straight line from door to door, across the central lobby of the building, is preceded by the Gentleman Usher of the Black Rod, and by the Serjeant-at-Arms of the House of Commons, bearing the Mace. The Prime Minister and principal members of the House generally follow next in the rear of the Speaker's train-bearer, but this is only by courtesy, for there is a rule by which it is ordered that members proceed after the Speaker in ranks of four, according to the order in which their names are drawn from a glass. This rule, however, is seldom carried out, and the members generally proceed in ranks of four-a-breast, as they happen to fall in.

The Speaker takes his place at the bar, with Black Rod on one side and the Serjeant-at-Arms on the other, and the members crowd round about him; and, when they have taken up their places, the Lord Chancellor, kneeling on one knee, hands the Royal Speech, which has been prepared in the Cabinet, to the Sovereign. On some occasions the Lord Chancellor has read the Speech, notwithstanding Her Majesty has been present; but this is not often the case.

The Royal Speech generally recites the relations subsisting between this and foreign countries, the necessities of the State as regards money, and the measures the Ministers propose to submit for the consideration of Parliament. As soon as it has been read, the Sovereign retires, and the two Houses proceed to business. Generally speaking, however, the Lords adjourn for a few hours, and the Commons, upon retiring to their House, do the same.

THE ADDRESS.

Both Houses re-assemble at the usual time, the Commons at four, and the Lords at five, each in their respective Chamber, without reference to the other. Their first business is to consider the Royal Speech, and to prepare an Address in reply, but before this is done, it is the practice of both Houses to read some Bill a first time, in order to assert their right to deliberate without reference to the immediate cause of their being summoned, as described in the Queen's Speech. After this has been done in the House of Commons, the Speaker reports that he has attended, in obedience to a summons from the Sovereign, at the bar of the House of Lords, where the Queen made a Speech; and he adds that for greater accuracy he has obtained a copy of the Speech, which he thereupon proceeds to read. The Royal Speech is then taken into consideration by the House, and an Address in reply, which, in substance, is usually a repetition of the Speech itself, is moved and seconded by two supporters of the Government. Although this reply is addressed to the Crown, and refers only to the Speech, the discussion upon it is the occasion of a general review of the proceedings of the Ministers of State during the interval between the last occasion upon which Parliament was in session, commonly known as the recess. If the acts of the Ministers, during the time Parliament has not been sitting, are approved by the people as represented in the House of Commons, the Address in reply, as far as that House is concerned, is adopted in the form proposed by the Government's supporters. If, on the other hand, those acts are disapproved, an amendment is moved against the Government. This amendment would come from what is called the Opposition, which is composed chiefly of the supporters of those who at some previous time have acted as the Ministers of the Crown, and who uniformly hold opinions radically different from those acted upon by the Government then in office. The amendment would be called a motion of Want of Confidence, and, if carried, all the Ministers would resign their offices into the hands of the Sovereign for the reasons already described in the chapter on "The Responsibility of Ministers." Precisely the same order of business is followed in the House of Lords, but the result is not necessarily the same in both cases. Indeed it very often happens that resolutions directly contrary are come to.

LEGISLATION.

As early as possible after the Address in reply to the Royal Speech has been agreed on, members of the Government introduce the several measures they wish to submit for the consideration of Parliament, which have been referred to in the Speech from the Throne. For instance, the Secretary of State for the Colonies, who may happen to be a member of the House of Lords, will, perhaps, submit a measure in that House for making some alteration in the Government of Jamaica; the Secretary of State for India, also a Peer, probably, may propose some measure for the better government of India; and the Lord Chancellor may submit a Bill for the better administration of the law. In the Commons, the Home Secretary may propose a change in the laws relating to the building of houses, or the employment of children in factories; the President of the Board of Trade may recommend an alteration in the laws relating to shipping; and the President of the Local Government Board may propose a change in the Poor Law.

Every measure must be read a first, a second, and a third time in both Houses, and be considered in accordance with certain fixed rules, and as a description of the course adopted with regard to one Bill will give an idea of the process through which every Bill has to pass, we will take the Home Secretary's Bill as an example. In the first place then, the Home Secretary, being a member of the House of Commons, would be called upon by the Speaker in the order in which his name appears on the "Orders of the day," or programme of the day's proceedings, and he would rise in his place and move for leave to introduce a Bill for the amendment of the law relating to the employment of women and young persons in factories. Perhaps he would explain the object of the Bill, and he might also describe the more important of its provisions; but this is not always done, and, generally speaking, leave is given to introduce the Bill without comment. In cases, however, where the Bill is of very great importance, the whole of its provisions, as well as the object sought to be attained by it, is elaborately explained to the House on its introduction. The motion for leave to introduce the Bill, having been agreed to without a division, for it is seldom the House refuses this, the Home Secretary, at the close of the sitting, appears at the bar of the House, holding his Bill in his hand, and, on being called on by the Speaker, he announces that he has "a Bill," whereupon the Speaker orders it to be brought in, and, on its title being read by the Clerk at the table, the question that it be read a first time is formally put from the Chair, and this motion is generally agreed to without either comment or division. In the course of a week or two, or as soon as an opportunity can be secured, the Home Secretary will move that the Bill be read a second time. At this stage the House

considers the principle of the Bill, without much regard to its details; and in all cases, when the House reads a Bill a second time, it is understood that it accepts the principle only, without being pledged to agree to any of its clauses. Accordingly, upon this motion being made, the members thoroughly discuss the principle involved; every member has a right to express his opinion upon the principle, and to give his reasons for that opinion; he may also suggest alteration in the Bill, although no one can speak more than once, except the mover of the original motion, who has the right to reply to all that has been said in argument against his proposal. If any member objects to the principle of the Bill altogether, he may move that it be read a second time upon that day six months, which is equivalent to moving its rejection, because when that day six months arrives, the House will, probably, have been prorogued. Let us suppose this amendment is moved by a member who thinks further interference with factories is undesirable. The discussion will then be continued on that question, and if many wish to speak upon it, the debate may be adjourned until the next sitting, and the next, and be continued for as many nights in succession as may seem desirable to the House. There is no rule limiting the length of any debate, the number of speakers, or the length of their speeches. All this is left to the members' sense of propriety alone, and although it sometimes happens, upon occasions which excite great interest in the country, that disputes occur as to whether a debate shall be prolonged or not; and although they are sometimes prolonged to unnecessary length, the rule is a very good one, because, while it is in operation, it can never be said that any question has been decided, without the representatives of the nation having had opportunity for discussing it fully, if they chose to do so. When all who desire to speak upon the question have stated their opinions, the Speaker rises and puts the question. He does so in accordance with certain well-established rules, which enable the House to express its opinion upon almost every conceivable aspect of a question. The Speaker first of all says, "The original motion was, 'That this Bill be now read a second time,' since which it has been moved, that we leave out all the words after the word 'That,' in order to insert these words: 'the Bill be read a second time this day six months.' The question I have to put," continues the Speaker, "is that the words proposed to be left out stand part of the question." In this the Speaker goes no further than to ask the House in what form the question shall be put to it. Having put the question, "That the words proposed to be left out stand part of the question," the Speaker adds: "As many as are of that opinion, say 'Aye.'" Immediately all the members who are of that opinion shout "Aye." The Speaker, still standing, then says, "As many as are of the contrary opinion say, "No," and immediately all those of the con-

trary opinion shout "No." Generally speaking, the volume of sound comprised in the uttering of one hundred noes, is greater than the volume of sound comprised in the utterance of one hundred ayes, because "No" is a syllable more easily pronounced. The Speaker, making due allowance for this, will estimate which sounded the greater number, and having made up his mind, will give his decision in these words: "I think the Ayes have it," or "I think the Noes have it," as the case may be. If the sounds appear to him to be equal, and he cannot make up his mind which prevails, he may put the question again, but this is seldom done. Upon announcing his decision, which, let us suppose, is in favour of the "Ayes," any member who has said "No" to the question, may challenge that decision by calling out, "I think the Noes have it." If the Speaker think it is not intended to divide upon the question, he may say again, "I think the Ayes have it," but any opposing member may repeat, "I think the Noes have it," and upon this the Speaker would say "Strangers must withdraw." Immediately these words are uttered, the Clerk at the table turns a sand-glass, which runs out in two minutes; the Serjeant-at-Arms opens wide the doors of the House; every person, not a member, who may happen to be sitting in seats in the lower part of the House, reserved for strangers, and every person, not a member, who may happen to be in the lobby, outside the door, is ordered to withdraw; bells are set ringing by means of electricity, in every part of that half of the building in which the House of Commons is situated, so that no matter where a member may be, as long as he is in the building, he is informed that a division has been called, and that if he should desire to take part in it, he must immediately hasten to the House. He will have no difficulty in doing this, for all the approaches to the door of the Chamber are kept clear by the police when the division bell rings, and if, as it sometimes happens, the division is called when very few members are in the House, the chamber will be quickly crowded by members from the dining room, the library, the committee rooms perhaps, or any of the numerous offices connected with the House. As soon as the sands have run out of the glass, the Speaker cries, "Order, order," and the Serjeant-at-Arms closes the door and locks it so that none can enter or leave the chamber until the division is over. The Speaker then puts the question again, and finally the same form is observed as before the sand-glass was turned, except that upon the Speaker's decision being challenged, he cries, "The Ayes to the right and the Noes to the left. Tellers for the Ayes Mr. A. and Mr. B.; tellers for the Noes Mr. X. and Mr. Y." The tellers are usually the two junior Lords of the Treasury on the part of the Government or "Ayes," and the mover and seconder of the amendment on the part

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of the "Noes." All those who called "Aye" then pass by the Speaker's chair on his right hand, and go into a lobby at the side of the House; the "Noes" walk to the other end of the House, and passing out by the bar turn to the left and go into the opposite lobby. When they have all passed in, and the House is pronounced clear, the doors of the lobbies are locked, so that none can return to the House without passing through the lobby. The "Ayes," therefore, who entered the lobby by the Speaker's chair, re-enter the House by the bar, and the "Noes" who entered their lobby by the bar re-enter the House by the Speaker's chair. In their passage through the lobby they come to a desk by which only one member can pass at a time, and at this desk stands a clerk with a list of the members' names before him, arranged alphabetically. As each member passes, the clerk makes a mark against his name, and these names are published with the minutes of proceedings next morning. Having passed the clerk at the desk, the member meets the tellers at the door; Mr. A. for his own side, and Mr. X. for the opposite side, both of whom count aloud as each member passes into the House. As soon as the members have passed out of a lobby, the tellers for that side go to the assistant-clerk at the table and tell him the number. He writes it down upon a piece of paper prepared for the purpose and waits for the tellers upon the other side. Upon their giving him their number he writes it down in like manner, and then hands the paper to the chief teller of the side that has won. Let us suppose the "Ayes" have won, and that he gives the paper to Mr. A. By this time it is known that the Home Secretary's Bill has been approved by the House, and that it is the wish of the House that the question be put. Mr. A. then holding the paper in his hand, with Mr. B. upon his left and Mr. X. and Mr. Y. standing next Mr. B., advances to the table, and all four having bowed to the chair, Mr. A. announces with a loud voice that "the Ayes to the right were (let us say) one hundred and forty-seven, and the Noes to the left were one hundred and two." The paper is then handed to the Speaker, and the tellers bow and retire; the Speaker again announces the numbers from the chair as the teller had done, and adds, "The Ayes have it." He then formally puts the question, "That this Bill be now read a second time," and adds, "As many as are of that opinion say Aye; as many as are of a contrary opinion say No. The Ayes have it," and there being no challenge, he repeats, "The Ayes have it." The Bill is then considered as read. In former times the Bill was actually read in the House, but now every member is provided with a copy before the motion is made that it be read a second time, and he is supposed to have made himself acquainted with its contents. The reading of a Bill a second time signifies that its principle is approved by the House.

If, however, the "Noes" had prevailed, the Speaker would not put

the original question, "That this Bill be now read a second time," because the majority of the House would in that case have said "No" to the proposition that these words should stand part of the question, and he would put the question, "That this Bill be read a second time upon this day six months." Generally speaking, this motion would be carried without more discussion, upon the presumption that all those who voted "Aye" in the last division would vote "No" in this and *vice versâ*, and the Bill would be lost for the Session. Many Bills disposed of in this way are introduced year after year by members who feel convinced they will ultimately prevail; but they cannot be introduced twice in the same Session, nor can any motion be made similar in effect to a motion which has been negatived during the Session.

The amendment that the Bill be read "upon this day six months" is the amendment which is moved when the Bill is altogether objected to as unnecessary or unwise; but there are several less direct ways in which the rejection of a Bill may be brought about. It may happen, and very often does happen, that a member may object to the Bill, and yet wish something to be done in the matter with which the Bill deals. In this case he might desire to do something for the good of the children who work in the factories. He might think them very young to work hard all day and very helpless, but might wish to help them in a way different from that proposed by the Bill, and, in fact, wants another kind of Bill. In such a case he can stop the passage of the Bill by a motion that instead of reading it a second time a Royal Commission should be issued to make enquiry upon the subject, and to see whether any further legislation was necessary, and if so, of what kind it should be. This amendment would be dealt with in precisely the same way as the other. But perhaps a disposition might exist on the part of some members to avoid expressing an opinion on the Bill, and in that case a member might move what is known as "the previous question," which is, "That this question be now put." To say "No" to this is tantamount to saying, "I quite agree with you, but it is better we should not press the point at present."

The Bill having been read a second time, the next thing is to consider it in detail, and that is usually done in Committee of the whole House. The motion made by the Home Secretary, who still has charge of the Bill, is "That the Speaker do now leave the chair;" This motion may be met by amendment, a debate may be raised upon it, and protracted to any length the House may see fit, and the question may be decided by a division in the same way as upon the motion for the second reading. The most common amendment moved is, "That the Speaker do leave the chair upon this day six months," which, of course, means that the House do not go into Committee at all; and, if carried, the Bill would be lost, although it had been read a second time.

If the House resolve to go into Committee on the Bill, the Speaker leaves the chair, and the Serjeant-at-Arms places the mace under the table; the Chairman of Committees sits at the table in the chair usually occupied by the clerk, and the Speaker either sits in the House or retires as he may feel disposed. The Bill is then discussed clause by clause and even word by word.

The clauses of a Bill are prefaced by a preamble which recites the necessity for legislation upon the subject with which the Bill deals, and as the wording of this preamble generally depends upon the wording of the clauses, it is invariably postponed until the whole of the clauses have been settled. Consequently, the first question the Chairman of Committees puts is, "That the preamble be postponed." This being agreed to, he calls, "Clause 1," and any member who objects to it may rise in his place and suggest that some words be left out in order that others may be substituted. The question is discussed and divisions are taken in the same way as ordinary motions are disposed of by the House, except that in Committee members may speak any number of times. The speeches, however, are usually short, and except upon very important occasions proceeding in Committee are made up of conversations.

Some Bills are disposed of in Committee of the whole House in five minutes; others occupy several sittings. When a Committee is unable to go through a Bill in the course of a single sitting, it orders the Chairman to report the progress made with it to the Speaker, and to ask leave to sit again. When the Bill has been gone through and settled to the satisfaction of the members, the Chairman reports the fact to the Speaker, and a convenient day is named for the House to consider the Bill as amended by the Committee.

Sometimes it is thought more convenient not to consider a Bill in Committee of the whole House, but to refer it to a Select Committee. This is usually done in cases where the subject treated of is technical and understood by only a few members, and might very properly be done in the case of a measure dealing with workpeople in factories. A Select Committee is formed of a few members selected from the whole House who are appointed to assemble in a Committee room during the day time, and have in certain cases power to send for and examine witnesses upon oath concerning the matters dealt with by the Bill referred to them. They appoint a chairman from among themselves, and conduct their business in all respects in a manner similar to the course adopted in a Committee of the whole House.

When the Report of the Committee which amended the Bill is being considered by the House, the Bill may be still further amended, after which it is ordered to be read a third time; but on the motion that it be read a third time it may be again debated at length and opposed just in

the same way as upon the motion being made that it be read a second time. After it has been read a third time, the motion is made that the Bill do pass, upon which it may be still further amended, if need be, and then the Bill is transferred to the House of Lords.

A Peer has no need to ask leave to introduce a Bill to the House of Lords : he has the right to do so, and when he lays a Bill upon the table it is invariably read a first time without opposition. This Bill, the course of which we are following, might have been introduced in the House of Lords in the first instance, where, except in respect of its introduction, it would follow precisely the same course as in the House of Commons. And the fact that it has come from the House of Commons makes no difference in the mode of treating it. It must be read a first, a second, and a third time, and the Peers may reject it altogether or amend it both in Committee, and after it has been read a third time. When it has passed through all these stages it is sent back to the House of Commons, if any amendments have been made in it, that those amendments may be considered by the House of Commons.

Upon regaining possession of the Bill, the House of Commons can reconsider it only as regards the amendments which have been made in it by the House of Lords ; it may decline to accede to the amendments, or it may still further amend them ; but it cannot review the whole Bill. If it should decline to accede to the amendments or any of them, it states its reasons for so doing, or asks for a conference between the two Houses. In the former case the Lords consider the reasons and agree to them or not as they see fit ; if the latter course is decided on, certain members of both Houses are appointed to confer upon the point, but this latter course has fallen into disuse because the Peers at a conference remain covered while the Commons are required to uncover, and other formalities are observed upon such occasions which are distasteful to members of the Lower House. In cases where the Lords' amendments are amended only, and are not wholly objected to, the Bill goes back to the House of Lords where these fresh amendments only are considered, and so a Bill may go backward and forward many times before it is ultimately agreed on. If no perfect agreement can be come to, if, for instance, the Lords require something inserted in the Bill which the Commons will not admit, the Bill is lost, and cannot go forward for the Royal Assent.

From this it will be seen that a Bill passes through no less than eight ordinary stages in the House of Commons and seven in the House of Lords, and that its progress may be arrested at each of these by any member who chooses to interest himself in the matter, so that if it should not leave the hands of the Legislature perfect it is not from want of opportunity, but rather from want of attention on the part of those who have accepted the office of legislators.

ON THE TEMPERATURE OF THE BRITISH ISLANDS AND ITS RELATION TO STORMS.

THE term "weather-glass" has been so long appropriated to the barometer, that people are very likely to forget that weather depends on a great many more conditions than the mere pressure of the atmosphere. The Temperature of the air, the degree of Dryness or Dampness which it possesses, and, though last, not by any means least, the Direction of the Wind, are all circumstances which must be taken into consideration by anyone who really studies weather.

In this article we shall say a few words about Temperature, and the way in which it is affected at a period of storm.

In dealing with temperature observations it must be remembered that it is of the greatest consequence to note the hour at which the observations are taken. This matter is of less moment as regards the barometer, though of course that instrument should be read at the same hour every day. In the case of the thermometer, however, where the range of its readings during the 24 hours not unfrequently exceeds 20° in calm sunny weather, unpunctuality in reading, even to the extent of a quarter of an hour, will render the observations nearly worthless. At 9 a.m., a very suitable and convenient hour for taking morning readings, the temperature of the air is rising fast from minute to minute, and readings taken at 9.15 cannot be compared, for any useful purpose, with those taken at 9 a.m. the previous morning.

It is not necessary to go back to the A B C of meteorology, and explain why Polar winds are colder than Equatorial. As a general rule, the air which flows from off a continent, in our latitudes, in winter, will be colder than that which comes off the sea. Accordingly, the coldest point of the wind-rose with us is the N.E., and the warmest the S.W. On the east coasts of America and Asia the coldest point lies more in the N.W., and the warmest in the S.E. This is evidently due to the fact that the actual coast line of these continents trends from N.E. to S.W., so that the main mass of the land lies in a north-westerly direction, whereas with us the coldest district lies to the east and east-north-east. We speak more especially of the winter months.

Assuming, therefore, the fact that the Polar current, or the easterly wind, is colder than the Equatorial, or westerly wind, and remembering that this difference of temperature brings with it also marked contrasts between the two currents as regards the amount of moisture which they contain, it is quite evident that whenever these two masses of air are brought into close proximity with each other, a disturbance of some kind or other must result; heavy rain or snow is sure to fall, often

accompanied by thunder and lightning, with perhaps a storm of wind of more or less violence.

To show how striking is the difference in temperature between the two currents of air of which we have been speaking, we may say that during a heavy winter gale a sudden shift of the wind from W.S.W. to N.W. has been known to bring about a fall of the thermometer of 15° in five minutes. This occurs when the cold air of the Polar current at last succeeds in forcing its way laterally into the district where the south-west wind has just been blowing, and brings with it its own temperature, producing a heavy fall of rain, and causing the barometer to rise very rapidly.

It is evident that such a phenomenon as this cannot easily be explained, if we suppose that the air in a storm sweeps round and round a certain point, and may cause a ship scudding before it to make several complete circuits round the centre, during which she has the wind from each point of the compass successively.

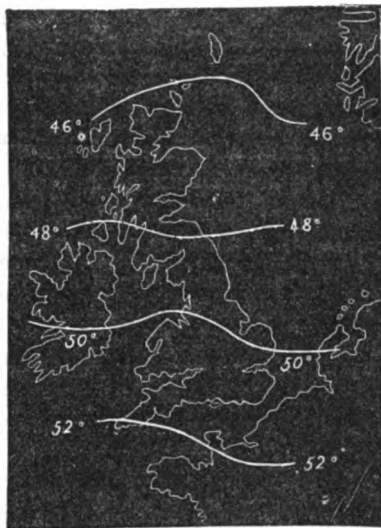
There is a famous account of a ship, the *Charles Heddle*, having been led such a dance in a Mauritius hurricane as that described, but as far as we know no such thing could happen in our storms. Although, on the Daily Weather Charts the wind-arrow sometimes forms a closed curve, and takes its tail in its mouth, as a serpent is popularly supposed to do, it cannot be maintained that a balloon allowed to float freely could ever come back, like a boomerang, to the place whence it started. It seems more probable that the air near the centre of the storm is gradually drawn in to the centre, and rises there. Some meteorologists believe that the reason of the great cold of the north-west wind, which comes in at the end of a storm, is that the air forming it has actually descended from the upper regions of the atmosphere to fill up the void left by the ascent of so large a mass of warm air from the southerly wind.

Be this as it may, the fact is well known that whenever we have, on any day, a great difference in temperature between any two stations in these islands, we may expect a storm. Thus, at the beginning of 1871, just after the very cold days at Christmas, the temperature one morning, at Scarborough, was 16° , while it was 44° at Scilly. It is hardly necessary to add that at Scarborough a light easterly breeze was felt, and at Scilly a stiff southerly gale.

In judging, however, of the importance of contrasts of temperature, we must remember that we have to consider not only the actual temperature observed, but also the amount by which it differs from the mean temperature for the place and the time of year, and so we must speak of the temperature of these islands as a whole. This question we are at last able to discuss with some approach to confidence, thanks to

Mr. Buchan's labours and his charts; one for each month and a large one for the year, which have lately been published in the *Journal* of the Scottish Meteorological Society.

Taking first, the following chart for the year, we find that the range of average temperature for the year almost exactly amounts to 6° . The warmest isothermal line, that of 52° , passes a little to the north of the Scilly Isles, cuts off about half of Cornwall, and then crosses to France, near Cherbourg, and goes on to Paris. The coldest, that of 46° , sweeps from the Butt of



Lewis, through the middle of Pomona, in the Orkneys, nearly to Fair Isle, and then trends away southwards, towards the Naze of Norway.

These lines are thus rudely parallel to each other, and the five which lie between them (of which we have only given two), divide the space almost equally, so that for each de-

gree of latitude as we go northwards we lose about one degree of temperature. When we come to look at the monthly charts, we find that they tell a very different story, and the isothermal lines go wandering about them in a way which, at first sight, seems rather puzzling. We must see whether we can, to any extent, decipher the causes of these strange vagaries.

The most equable climate of all our stations is that of the Shetlands, where the average temperature in August is 54° , and that in March 38° , so that the range is only 16° . Next to them come the Scilly Isles, where the range is 18° , and the north-west coast of Ireland does not fall far short of these districts in regard of mildness, for there, at Malin Head, the range is only 19° .

The greatest range is found in Cambridgeshire and Essex, where the temperature is 88° in January, exactly the same as it is in the Shetlands in March, but in July the temperature rises to the average of 64° , so that the range is 26° .

These facts show us at once that the cause of the warmth of our climate is our nearness to the Atlantic, and more especially the influence of the Gulf Stream.

Looking at the following chart for January, we see that the warmest spot on it is the Scilly Isles, where the mean temperature of the month is 45° , and frost is hardly known. Accordingly, we need not wonder that hedges of geraniums, several feet high, are to be seen in the gardens there; as a drawback to these



advantages, it should be stated, that no fruit, except apples, will ripen there, for our best fruits require a severe winter to harden the young wood. The curve of 49° skirts the extreme southwest corner of Ireland, and takes a south-east course, through Plymouth, to the Channel Islands. The curve for 41° runs to the south-

ward, through the centre of Connaught to Galway, thence to Buttevant, then up through Kilkenny to Dublin, and out nearly to the Isle of Man, when it turns sharp round again, and bends southward, through Beaumaris and Tenby, out to Weymouth, and nearly to Caen, in France.

The line for 39° , or lines, for there are two, are the strangest of all. Firstly, there is a little oval patch in the very heart of Ireland, with the town of Athlone about at its centre. The other 39° line starts out in the Atlantic, north of Rockall, runs E.N.E. till it embraces the Shetlands in a loop, passes north of the Orkneys again to Cape Wrath, and sweeps down outside the Scotch coast, just touching Skye and Mull, and cutting off part of Cantyre and of Wigtonshire. Thence it goes across to Lancaster, Birmingham, Oxford, and Portsmouth.

Lastly, the line for 37° grazes our east coast, cutting off the district called the Bullers of Buchan in Aberdeenshire.

The following chart for July resembles that for the year much more closely than that just described. The highest temperature in the month, that of 64° , is found over an oval space extending from Cambridge to the middle of Wiltshire. The others take a rudely E.N.E. and W.S.W. course, most of them showing a bend to the northward, as they pass over land, shown more decidedly in those of 62° and 58° , while, on the contrary, that of 60° slips right down from Londonderry and the north shore of Lough Neagh, into the Irish sea, to the south of the Isle of Man, and then rises again, till it goes out into the North Sea, at Newcastle, nearly on the same parallel of latitude as it entered Ireland from the Atlantic.



We have said that the reason of our warm climate is our nearness to the open ocean, and to this, too, are due the extraordinary irregularities in the courses of our isothermal lines. The sea is much less affected by heat or cold than the dry land, so that it remains pretty nearly at the same temperature all the year round. Thus we find that the temperature of the three winter months is very nearly the same at all the islands along the coast of Scotland as it is at the Shetlands, while the same temperature is found far to the southward, in the little isolated patch in the

centre of Ireland, where the influence of the sea is comparatively little felt.

In fact, if we start in January from the Scilly Isles to find a mean winter temperature 5° lower than we have at that favoured locality, we shall find it much sooner if we go eastward, where it occurs at the Isle of Wight, than if we go north, when we should have to go up to the Mull of Galloway before we fell in with it. At this same time of year, the isotherm of 32° , of constantly frozen ground in January, runs nearly due north from Strasbourg, for 22° of latitude, till it touches the parallel of 70° —far within the Arctic Circle—when it trends back and runs out south-westwards.

This fact points at once to the Gulf stream as the cause of the high temperature, or rather to the off-shoots of that current, which sweep along our western and northern shores, up to the coast of Norway, and even beyond it, keeping the harbours near the North Cape free from ice in the hardest winters, and raising the mean temperature of the shores which they wash to a height which never could have been reached were it not for the volume of warmed water which is constantly flowing by.

Several instances confirmatory of this idea are given by Mr. Buchan, when he compares the observations taken on outlying islands like Monach, in the Hebrides; or even Easdale, near Oban, with those made on the adjacent mainland of Scotland. The temperature of these small

islands is nearly entirely regulated by that of the sea water, while that of the inland stations, the further we recede from the coast, going eastwards, approximates more and more to that which prevails over the Continental stations of Northern Europe, with its severe cold in winter, and its burning summer heat. If we keep the general course of these curves in our mind, and also remember that, as a rule, there is much more easterly wind, and, therefore, cold weather, in France and in the south of England than in the north of Scotland, we shall be able to see what thermometrical conditions denote danger and what do not.

In all cases a sudden outburst of warm weather in winter is a very bad sign. Mild winters also are invariably stormy ones, for the simple reason that no matter how mild our weather is, we may be certain that the temperature over Russia is comparatively very low, and that the mass of cold air lying over it must have a tendency to burst out towards these islands and to cause a storm. In addition to this normal state of things, the temperature always rises in front of, and remains high on, the southern side of an advancing storm. If we find the temperature rising on the channel coast and the north of France, we may look out for a southerly storm over England generally, but if the rise of temperature be confined to Scotland, as when a thaw sets in in the far north, while it is still freezing hard in England, these conditions may only show the passage of a storm to the north of us, which may perhaps touch the Shetlands, but will not usually strike the coast of Norway much south of the Loffoden Islands.

There is one very important matter to be considered in connection with this. We see by the chart for January, that the temperature on the south coast of Ireland is several degrees warmer than that on the east coast of England, so that the case we have already quoted of 28° of difference between Scarboro' and Scilly only points to 20° of real disturbance of the conditions that ought to exist.

A sudden rise of the thermometer in Ireland, though it may herald the approach of a storm to the west coast of England, will not necessarily indicate that that storm will travel right across the country. We find that for days together the temperature in Ireland may be much warmer than in England, and a strong southerly wind, even a storm, may prevail on our west coast even up to St. George's Channel, without being felt at all on the east coast of England. This happens especially when the air over the North Sea is particularly cold and dry.

On this point, M. Mohn, the able director of the Norwegian Meteorological Institute, has made some important discoveries. One of the stations from which he receives reports by telegraph is Toftemoens, on the Dovrefjeld, a station well known to Norwegian tourists. This post-house, for such it is, is at a level of upwards of 2000 ft. above the

sea. Professor Mohn has found that if the thermometer over the British Islands begins suddenly to rise, in winter, he is quite safe in concluding that such a storm will *not* reach Norway, unless the temperature at Dovre begins to rise. If the warm southerly current has not penetrated to that station, and the high central plateau of the country, he knows that the mass of dense atmosphere which covers the whole of the Scandinavian Peninsula will prevent the advance of a storm.

A fall of temperature is also indicative of wind, but from the Polar side, not from the Equatorial. In this case, however, the sign is not nearly of so much value, for, owing to the fact just alluded to, that the equatorial wind appears first in the upper regions of the air, while the polar wind lies close to the ground, the thermal indications of a northerly wind come with it and do not as a rule precede it. Accordingly, an isolated observer cannot derive so much benefit from a fall as from a rise of the thermometer.

We can, however, gain some advantage from noticing the falls of temperature. It has been found that, in general, cold weather advances from the eastward, while warm weather travels from the westward. The bitterly cold week, February 6-13, 1870, was preceded by an intense frost over the Baltic and Russia, and the outflow of the volume of chilled air which had been collected over the area in question caused an easterly gale on our coasts which lasted, at Yarmouth, with more or less severity, for more than nine days.

As regards contrasts of temperature between the north and south of our islands, thus much appears to be pretty fairly certain.

If we find that a hard frost is reported in Scotland, while the temperature in England is high, we may be certain that a storm of some kind is not very far off, and it will probably commence from the southward. If, however, the cold weather is felt in the south of England while it is warmer at the northern stations, we need not fear a storm on our coasts.

The reason of this has not as yet been clearly ascertained. It appears to lie in the circumstances that easterly winds are striving to flow towards the equator, while westerly winds are seeking to reach higher latitudes. If, therefore, an east wind lies on the northern side of a west wind, the tendency of each current is to force its way into the channel of the other, and so produce an eddy and a storm. If, however, the east wind is flowing on the southern side of the west wind, neither current finds any serious obstacle in its immediate way, and so they flow on peacefully one beside the other, and a calm is noticed along the debateable land between their respective territories.

A SONG OF THE YEAR.

The earth is bare—without a sound,
The sweet flowers sleep beneath the ground;

 Winds from the east are blowing.
Young is the year, and weak as a lamb
That bleats and totters around his dam;
 The seeds of death are growing.

The bright sun shines, and the bright rain showers
On the grave of the Old Year green with flowers;
 Cocks in the loft are crowing.

Lifted are lowering clouds of care,
And sick men smile as they sit in the air;
 The seeds of death are growing.

The year is fair, and the year is strong,
Loudly he singeth the whole day long;
 Scythes in the corn are mowing.
And the hugh oak hears, and the wide hung beech
Sighs more subtle and sweeter than speech;
 The seeds of death are growing.

The corn is dead in the golden sheaves,
And dry the whisper of withering leaves;
 Kine on the leas are lowing.
The farmers forehead is furrowed across,
As he counts the profit and weighs the loss;
 The seeds of death are growing.

The year is failing, the year is sick,
The grain is gathered in barn and rick;
 The golden woods are glowing.
And many a bride falls faint from the bliss,
Of the strong new wine of her new lords kiss:
 The seeds of death are growing.

The old gray year is left alone,
His flowers are dead, the leaves are gone;
 The streams have ceased from flowing.
And warm at heart in the cold gray morn
The young mother suckles her babe new-born;
 The seeds of death are growing.

THE LORD OF MISRULE.

BY MAR TRAVERS.

(Continued from our June Number.)

"I pray ye, Sirs," he went on, his eyes wandering with glances of affection from one to another, "to concern yourselves nought for my safety. I must bear that which I have brought upon myself, be it what it may;" and, in an undertone, he muttered, "for I'd do it again; yea, and I'd spare him not; yea, I'd e'en black his bent body as he blacks a fair name."

"Perhaps a meek and full apology would buy compassion," suggested a youngster.

"Kind words butter no parsnips," was the answer accorded.

"Hold, I have bethought me of a plan," said Sir Francis, who had hitherto kept silence; "much might be done if we can acquire Mistress Matilda's sympathy, and beg her gracious intercession with her noble father."

"Who undertaketh to be spokesman and carry the complaint to the lady?" cried several.

"I," replied Francis quickly, springing from his horse and laying aside his spear. "Be not cast down, old Lord, there may yet be hope."

"Not if the request originate with thee," sneered Lewisham; "methinks thy endeavours to enlist the lady's favour have met signal failure of late."

A general laugh greeted the pointed remark, which called the colour to young Frank's face, he knowing how far too true for his happiness it was; but he vouchsafed no reply and withdrew.

Matilda fortunately happened to be walking alone round the great hall—the restlessness of her troubled spirit forbade physical repose. Sir Francis regarded her a few minutes in silence, watching her with distressed eyes. At length she became aware that someone was waiting, evidently for a purpose in which she was concerned, and asked sharply what he desired of her. He went carefully through the story he had engaged to tell, drawing in a few rapid words the strange scene that had occurred in the tilt-yard, and, finally, not without a certain eloquence, besought her intercession to ward off the disgrace which would certainly accrue to the Lord of Misrule through his unguarded passion.

"With you only," he added, "lieth the barest chance of obtaining pardon; no other hath such influence in calming the hot temper of your father." Then he waited for answer or comment from her. Two very bright spots showed themselves in Matilda's cheeks.

“Who is this Lollard for whom Master Digby risketh so much?”

“Ye might guess.” Francis, as he spoke, watched her sharply. “A clown who weareth dingy colours, and is mightily choice in his speech; who findeth his tongue only when he is in the pleasaunce yonder by the river—Harold the Good.”

“And the beautiful lady?” said Matilda, averting her eyes and bending her head lower and yet lower from his scrutiny.

“That ye might see with half an eye,” nodded observant Francis. “Need I tell you her name? She is none other than your own sister.”

There are moments in some lives that outweigh the whole number of previous years balanced against them. In that one instant the acute pain Matilda had suffered for the past three months reached its height, but it was a suffering only to be borne in silence. After the first terrible heart pang, a struggle ensued, in which the noble and ignoble passions of her nature waged fierce war; she, leaning sick and faint against the wall, facing the searching gaze of her discarded lover with an almost heroic effort to be calm and make no sign. At length the quenchless thirst for revenge hoisted the victorious flag, and beat down womanly pity. She raised her eyes, meeting his steadily, and laid her hand upon his arm. “Sir Francis,” she said slowly, drawing her breath hard, “ye and Master Harold often fence together.”

“Yes,” he answered, wondering at her flushed face and her tightening fingers.

“The spears are blunt always, are they not?”

“Truly they are,” he replied, bewildered. “Do ye not know how dishonourable it is counted to fence with sharp weapons? We use rebated spears. Why,” he added, almost hotly, “were such a thing to be breathed in the tilt-yard, even though it happened through agreement, ’twould well nigh cost the offender his life.”

“But if it were quite a mistake—if a man fought his antagonist with a sharp spear, and believed he had taken one of the ordinary kind?”

More and more perplexed, yet smiling at the improbability of the supposition, the young knight stated his opinion that an unlucky mischance could hardly be accounted criminal.

Matilda pressed the arm upon which her fingers rested, and the blush spread from throat to temple.

“Then, Sir Francis,” she said slowly, “*will ye make this mistake?*”

The question passed her lips calmly, but she felt as she looked into Frank’s eyes, that the bitterness of her soul was augmented by the horror and astonishment she read therein. Her lover, in the first shock of his surprise, threw off the small hand’s clasp and recoiled from the beautiful girl who flung so cruel a mission across his path. His generous heart, his chivalrous honour, his reputation, his conscience forbade; but

there came uppermost a dominant temptation too powerful to be resisted. He might win the possession of the only lady he had ever loved by perilling his safety for her sake, at her request. Life, he argued, were worth little without this gain, and, should he pass unscathed, she was irrevocably bound to him. He saw through her motives and gave way himself to a like impulse. The shamed crimson dyed his brow, and in quick succession came the deadly pallor of cheek and lip and the heart-throbbing, loud and rapid. He took both her hands in his, and his and her's were equally cold; he made her look at him, and, in the very midst of her infatuated resolve, it pained her to note the sorrowful cloud, and gleaming hope fitting alternately across the brow which hitherto had known no shade of dishonourable purport.

"Hark," he said; "Thou hast put my life in jeopardy, thou hast stained the fairness of my name and the good repute of my knighthood. Mine honor hath gone from me. I do not play so foul a game without prospect of great reward. Mistress Matilda, thou hast the reward in thy power. Wilt thou offer it for this self-sacrifice or no?"

"Methinks the sacrifice an even one," she involuntarily retorted.

"Let us not play with one another now," he said, in a tone of deep emotion; "leave thy woman's folly for the present. I await thy answer."

She gave it mechanically, "Yes."

"Amen."

He let her hands fall, the wrists were marked by his pressure.

"Thou wilt be true to thy promise, come what may?"

"I will."

He lingered yet a moment. They were both under the spell of some strong infatuation—he the less enthralled. A sunbeam slanted through the window-niche beneath which they stood, and irradiated her hair, recalling to his mind Harold's gold-brown locks, and he thought of the brave-hearted lad who loved as he himself loved, perhaps to the death; of the plot formed against him in the hey-day of his youth, and pity moved him.

"Thou art sure thou wilt not repent this? Thou wilt not cancel thy words and free me from this work?"

She shook her head silently, and he went from her into the tilt-yard. An hour later he returned and spoke to her, she took note of that, with his face averted.

"I have examined all the spears," he said, "and they are rebated, everyone."

Mistress Matilda roused herself suddenly.

"I will procure a sharp spear," she said, excitedly, "and put it in among the blunt ones, and thou wilt know it, for I will tie the tiniest

blue ribbon round the hilt. Shall I seek it now? Wilt thou fence to-night?"

A strange, wild excitement possessed her, burning her cheeks and inflaming her eyes, unnaturally. Had Francis looked but once into the poor, scorched face, he might have read the misery which dictated the cruelty, and in his generosity have soothed the one, and swept away the other.

"Nay, nay," he said, with a bitter smile; "let thy wit sleep for to-night, and accord me a few hours' peace, ere I do that which, to the death of my conscience, is to unite us. Nay, rather in thine own room sue for that mercy which is foreign to thy nature; or glory, if to pray be beyond thy power, in the bargain thou hast made with one who buys thy hand with his honour. Ah! there is the sting," he cried, passionately, "and it hath for a barb the knowledge of the cowardice to one who hath injured me in nought. Matilda, if I only did not love thee——." His voice faltered, and the tears he deemed unmanly welled to his eyes.

"To-morrow?"

She whispered the word, for the servants were thronging the lower hall.

"Be it so." Then to his recollection came afresh the forgotten pleading for the old Lord of Misrule.

"Remember thy intercession for Digby," he said; "let me have some gentle act to couple with thy memory." And for the first time he looked at her, and saw again how beautiful she was. She turned her head, and with consummate mastery of self, said aloud:

"I must bid you farewell, Sir, or I shall be a sorry sight at the supper-table this e'en."

Wherewith she passed him, crossing the hall slowly, and sought her room, listless even as to her dress for the coming meal, uttering not a syllable during the plaiting of her long soft hair.

To Wynfred's astonishment, she had fainted.

The supper-table that evening was, for a wonder, a dreary affair. Matilda, usually all life and beauty, sat either in depressed silence beside her neighbour, Harold, or talked at random with the gentlemen opposite. Lord Hugh's face was black as thunder. His dress, put on with extraordinary care, was strangely magnificent; trimmed with rare old "point," and adorned with jewels thickly set; a magnificence that at once ostentatiously paraded his rank and wealth, and rendered yet more palpable his deformity. Elizabeth wore her customary expression, and was gentle and serene, raising her deep, grey eyes not unfrequently to the face of Harold.

"By my troth," sighed Lewisham, regarding with glance of distress his platter heaped high with lumps of meat; "I have little inclination for food. The worry of to-day hath turned my stomach."

"Bring me wine," beckoned Francis to one of the servants. "I could drain the Thames," he muttered, tossing off a bumper; "and then, maybe, my lips would be no cooler."

"Something evil befalleth," said the good Lady Furnival, who firmly believed in the small superstitions current in her day; "for as I was replenishing the large salt for dinner, it spilled over on to the cloth, a thing I have not known to happen since my dear lord was wounded in tourney."

Presently, when the second course had been disposed of, and the sweets and wines were handed to the guests, the host spoke for the first time during the dinner.

"Ye who shared in the witness of to-day's affront in the tilt-yard," he said, looking round the board, with a black frown on his brow, "are here bade to believe that I will suffer no gross insult to pass therein unpunished, though the arm raised against my guest came of my own flesh and blood. I have warned my servant, Digby, that he leaveth my service in three days, and meeteth not the heavier dole of straight imprisonment, because of the gracious clemency of my noble friend, Lord Hugh de Courtenayc."

Francis raised his eyes to Matilda's face; his glance was a peremptory command, "Speak"—but she shook her head, sorrowfully, and he accepted the mute answer. It told him the truth plainly; she had spoken, and effected nothing. Elizabeth, ignorant alike of the nature of the insult Lord Hugh had suffered, and of her sister's pleading, hastened to intercede on behalf of the old man, whom she had known as servant, counsellor and friend all her life long.

"Will not the noble lord," she said, courageously braving the admonishing stare of all present, "display yet greater clemency, and extend the pardon fully? For this punishment, inflicted on our whilom favoured and beloved domestic, will afflict us also; and favour shown to Digby will render us ever beholden to him who granteth it."

"Peace, pert girl!" stormed Sir Harry, bringing his fist down on the table, with a force that made every plate and drinking-cup rattle. "Odds, this is a new fashion, indeed, if damsels of thy years are to wag their tongues at a father's proceedings. No more of it; no more of it!"

The main cause of this outbreak of wrath on his part was due to the chagrin he felt at being compelled, in honour, to discharge the trusty fellow, who had commanded his servitors for him these many years.

"Pshaw!" he ejaculated, when the long, dull meal was over, placing his hand on the shoulder of his eldest daughter, with rough tenderness; "Leave to me my own affairs, Bess, and never be for meddling with any one save thy busker."

Whereupon he clattered out of the hall, whistling to the mastiff he had just now regaled with kicks, and the guests knew by his clouded face that he wished none of their company.

All the next day Digby wandered in and out of the tilt-yard, like one distracted. Upwards of thirty years he had formed part of this household. During that long service he had never quitted Chester but to accompany his master to London, or, perhaps, once in five years, to take a holiday trip to York, where dwelt his married sister, the last representative of the Digby family.

"I've heard 'go' once, and I'll never hear the tone of my master's voice again," he murmured, as he paced the court; "never again shall I watch him beat them all at tennis, or hear his laugh roll out at their random shots in target play, or stand beside him, as he now and then fixed the ring into the board for the merry tilting."

Passing the rack, in which the spears were kept, he paused: "Ye may as well have another brightening from the same old hand," he said, and as he spoke, he collected them together, and carried them off to a corner, where he worked away at them with right good will, till beaded drops stood out upon his forehead. Resting once to wipe his heated brow, he became aware of white fluttering skirts close at hand, and looking up, he encountered Matilda's eyes.

"What art thou doing, Lord?" she asked.

"Giving a rub for old friendship's sake," he replied, regarding tenderly the shining steel.

"Why," she said, looking at him hard, and speaking with great distinctness: "I suppose thou intendest to witness a last fencing match this eventide?"

"Ah!" cried he, eagerly, "that sight would do me good. Many's the puny hand I've taught to hold a spear, and the strong lad I've buffeted, one glove against two, and the wrestle I've stood by, and looked at with shaking sides."

She had riven the little shaft in right skilfully, and the old man's thoughts dwelt on the chance of witnessing a good fencing match this night, until he made up his mind to ask it as a parting favour, and replaced the spears, glad to think he had polished them for the purpose.

The young fellows greeted his request with a laugh.

"Who'll show off to the Lord of Misrule? Who'll do old Digby a kindness?" was banded from one to another; and "I," and "I," rang from all quarters. Lewisham, engaged in tightening his bow, called out from the farther target,

"I heard Frank, there, this very matin, vaunting his dexterity in match with Harold Grey. Get these two to combat, and it will be good

play for ye till sunset. For Frank hath become so practised of late, that if your favourite can thrust, he can parry."

Sir Francis let fly an arrow in his turn, for they were in the archery field, and it was such a wild, wandering mark that it excited a general laugh, in which Digby joined.

"Never mind," said the youth, good-temperedly, disregarding their raillery, but turning a white, haggard face upon the little crowd; "I am ready and willing to fence with Harold Grey, and proffer him the challenge for this eventide. See to it." * * * * *

It was growing dusk, when Harold's heavy step sounded in the yard upon which Matilda's window looked, where she sat in a kind of torpor, upon which broke the sound of voices below, and each sound woke a fresh thought, each thought bearing a fresh pain.

"I have been mad—I have been mad"—she said to herself; but still, through the dawning repentance, flashed the hunger for revenge.

It takes a huge stone to dam the mouth of conscience. The cry she uttered to herself—"Absolution—I shall get absolution"—was like the attempt to stem the current of the sea with straw. She sank down on her knees in the gloaming, crushed her hands tightly together, pressed her forehead against them, and began to laugh. How strange and terrible a contrast; the hysterical laughter issuing from the covered lips, and the agitated form, bowed down, and grief-convulsed! Her nerves, strained to the utmost, could no longer sustain their tension. Tears succeeded; she cried from sheer physical weakness, and in the paroxysm of weeping, the temporary madness passed. When she rose from her knees, she trembled to such a degree that she could scarcely stand, and she supported herself by holding to various objects in the room, as she moved towards the door. Reflection painted on her mind the gigantic outline of her wickedness, the enormity of the crime she perpetrated; and she intended going straightway to the tilt-yard, to snatch back from her lover's hand the fatal blade. "If it were not too late. What if it were all over! Ah, no!"

She descended the steep, narrow staircase, reiterating the "no" loudly, vehemently. What was that hubbub in the hall, these thick voices, that rumble of confused tongues with which was mixed the weeping of women? She listened, panting; but the throbbing of her own pulses was of itself sufficient to render all else indistinct to her bewildered ears. Pushing aside the heavy curtain swung across the doorway, contracting her form, she crept along by the wainscoting into a distant corner of the dais where she fell rather than sat down, sheltered by the shadow of a window-niche. Everything met her eyes as seen through a mist, uncertainly; a cloud of gauzy dresses and tear-stained faces; a knot of men standing apart with stern lowering brows; a herd

of servants in the lower hall huddled together like cattle, and jabbering like magpies; a dusky darkness shrouding all, broken here and there by the last gleam of daylight, which caught the top of an old rusty helmet nodding from the wall, and was thrown back to the tinselled device of some glittering shield or banner. But one group in the scene alone attracted her attention and riveted her gaze. Standing prominently forward, she saw her father, Sir Harry Furnival, his eyes inflamed, his cheeks scarlet, the blue veins protruding from his broad forehead, and from the hand with which he grasped the collar of Harold's coat. Yes, Harold, calm, unshrinking, held like a delinquent, stood before her alive, unwounded; but where was Francis? She searched in vain for his stoutly-built figure among the many different groups, and in the search her restless glance fell upon something which arrested it as a magnet, upon a brightly polished spear, carried by the Lord of Misrule, which flashed unsheathed in the gathering gloom, and to which her fascinated eyes were drawn, because tied round the hilt she distinguished what was discernible to few, *the narrow blue riband*. She needed but a look into old Digby's face and noted its troubled expression, its unusual pallor, and she understood all, and, understanding, shrank back, bowing her head to her knees to suffocate the rising hysteria. And then Sir Harry spoke, his speech rendered almost inarticulate, so great his passion:—

“Ye know,” he said in one rapid sweep of his arm indicating the whole assemblage, “ye know that I in no wise desire to lead aught but a just and upright life. This, by many acts wherein I do not mean to glory, hath been proved to you all, nor hath anyone ere this dared to blacken with cowardice and crime the crest I have worn unstained this many a year. But to-day my honour hath been tampered with, foully abused, my generosity outraged, my confidence degraded, yea, my name and the fair repute of mine house dragged in the mud,” and he stamped his foot so that the boards rang again. “Do ye not hear,” he thundered, tightening his grasp and pointing the thumb of his disengaged hand to Harold. “I trusted this lad; I raised him to your level, gentlemen, he that was to bear my badge, and he repays me by enticing a heedless young noble into the tilt-yard to stab him. Let infamy, the deepest, the most fulsome that can stick to man, marking him in the eyes of his fellow-men, for ever brand these two who have planned this shameless plot betwixt them—Digby and his kinsman Harold.”

With which, he struck the hardy northman right across the face, launching his whole strength into the blow, and releasing the iron grasp he had so tightly held as he flung him backwards from his side.

Not a murmur broke from the assembled crowd, nor from the lips of Harold Grey. White as marble, save for the ugly, blood-lined mark

upon his cheek, he stood erect, looking neither to the right nor left, but steadily downwards, showing by no word or sign any resentment of the indignity he had received. He felt the full force of the conviction that, howsoever innocently, this deed done by his hand had separated him for ever from the lady of his love. Nevertheless, he could not return *her* father's blow. Through his half-shut lids he caught a glimpse of her in her white flowing dress, her pale, sweet face tear-stained, her little mouth expressive of exquisite pain, her hands locked together—his sorrowing love, his Elizabeth, lost to him; and the noble's wrath, the ignominy of a blow thus publicly given, faded into nothing before this keener suffering. It was as though a man in the death-throes, over whose eyes the film is already gathering, sees dimly afar off a white-robed retreating angel, near—hell's deep chasm, and, 'falling, feels that fall the more intensely from having caught a glimpse of heaven.

Suddenly, amid the hubbub, a cry, clear and shrill, that startled all, was heard.

"Stay! listen! I can explain; I will."

To the astonishment of those present, a figure, hitherto in an obscure corner, came out of the gloom, which hid its face, hurrying forward, pushing aside with a wild gesture of the hand any who through accident or curiosity obstructed her path. It was Matilda! who, scarce mistress of her words, attempted with distinct enunciation an audible expression.

"By my troth, I am dazed as one in a dream," ejaculated Sir Harry, turning to Harold. "Art thou guiltless of this murder?"

"Yea, verily he is," cried Matilda, emphatically raising her voice, and staring up into her father's face through her blinding tears. "Only one person is chargeable with this crime. That chanced by mistake. I see it all. The spears were mixed, and Harold was first at the brake and chose the sharp one, knowing nought. I tell ye, all these are innocent, and alas! alas! *he* must have received the wound willingly in combat, for that he knew what deadly unrebated weapon was turned against him by his friend's hand. I did it. It is I who am guilty."

The unhappy daughter made an effort to cross the dais, crying violently. Now and again she tried pitifully to stop her tears. Her strength waned; she cast a furtive frightened glance around her; she noted with sharp pain the abhorrence expressed in every face; she stumbled and extended her hands helplessly. Harold in generous compassion moved forward to offer her support, but Sir Harry interposed.

"Let none touch her," he said; "I forbid it."

The sight was heartrending. The look of intense misery and loneliness as she turned her swollen eyes upon Harold's face cut him to the heart. She made at length a sudden effort, and fled from the great hall to her own chamber.

A few parting words to the characters involved in the relation of this tragedy. The Lord of Misrule was, perhaps, the first to experience the generosity of a nature embittered by misfortune, and received from the hunchback's hands a pardon that cancelled both the affront of which he was guilty, and the sentence of banishment that had been passed against him. The terrible fate of Francis created between his family and Sir Harry's a feud which, sustained by the predatory warfare common to the aristocracy of the times, lasted through several generations.

Harold and Elizabeth were eventually united, a *mésalliance* exciting little curious gossip five centuries ago. Shortly after their marriage they sailed to Holland, the cruelties enacted against the Lollards rendering it necessary for personal safety that they should seek another strand where they might embrace in undisturbed tranquility the tenets of the new faith.

Lastly, Matilda sought immediate refuge from the opprobrium and pity of the world in the secrecy of the cloister, that "death in life" which has served more than one unhappy woman in good stead. From the date of her entrance to the day of her early death, brought about by a life of exacting penance, the rigour of which was never relaxed, none looked again upon the poor girl's face. Notice of her death was duly communicated by the compassionate abbess to the sorrowing parents, and to her, his youngest daughter, who was to have been the darling of his old age, Sir Harry erected in the private chapel of the castle a marble slab, upon which were simply traced the words—

"Judica, Domine!"

THE DANGER OF INVASION.

WE cannot unconcernedly pass by, like the Levite of old, the question which has recently been agitated respecting our national condition in the event of an invasion of our country. The *British Nautical Magazine* would scarcely carry out its purpose if it ignored the importance of such a subject. Not that we apprehend much real danger at present. So long as England pursues the path of honour and right principle in her dealings with foreign powers; so long as British energy and pluck live amongst us, we do not think other nations will care to attack us. But, on the other hand, it is true that complications, misunderstandings, cupidity or jealousy may at any moment involve us in some quarrel which may make the possibility of an invasion of our shores resolve itself into

a probability. In any such case there is no question that we ought to be in a position to successfully protect our beloved country and our beloved selves. Revivals are good in their way. When a nation rests on its laurels and gently slumbers on its attained prosperity; when it is lapt in self-complacency and self-indulgence; when the sentinel sleeps at his post, and the watch dog is too well fed and lazy to keep guard; then with stealthy tread the enemy draws nigh, and in a twinkling the streets are full of foreign armed men; and, unprepared to resist, vanquished by surprise, the nation is forced to yield its independence, its prosperity, itself, into alien hands, and to bend the neck to foreign rule and slavery. 'Tis a fearful thought for Englishmen. But we are now and then subject to revivals, which stir our blood and do something towards making us adopt measures for ensuring our safety.

The question, what would be our condition in the event of an invasion of our shores, has for some years been the subject of desultory conversation and vague surmise. It has culminated, we are glad to notice, in a fairly vigorous agitation. Mr. Vernon Harcourt has initiated a revival, and has awakened some considerable enthusiasm by his able paper* read at the United Service Institution in May last. He has called a host of Richmonds into the field, all anxious to say their say, to give utterance to the dark misgivings and ominous sinkings of their inmost hearts as to the possibility of invasion, and as to our resources to repel an invader. We welcome Mr. Harcourt in his new rôle, we gladly acknowledge the great service he does to his country by bringing his clear intellect to bear upon a subject of such national importance, and we heartily thank him.

Mr. Harcourt assumes, for the purposes of his paper, that our navy is superior to that of any other country in the world, nay, that it is superior to such a naval force as could be brought together by any three foreign nations combined, that is, for a fair stand-up fight. We are not at all disposed to question the propriety of this assumption. With our navy at hand near our shores, we do not apprehend there would be much chance for a landing to be effected by any large body of foreign troops. We believe that vessel matched against vessel we should be sufficiently strong to hold our own against the combined force of three foreign powers, and even then have a few vessels to spare to look after small prowlers.

But the whole point of the recent discussion turns upon the further assumption that a large proportion or the whole of our fleet is not at hand, and that in such a case certain foreign Powers—Germany, for

* Our Naval and Military Establishments regarded with reference to the dangers of invasion. W. Vernon Harcourt, Esq., M.P., Q.C. Paper read at the Royal United Service Institution, May 15, 1872.

instance—possess facilities for transporting and landing large bodies of troops on our shores which have not hitherto been sufficiently taken into consideration. It is in this view that Mr. Vernon Harcourt puts the very pertinent question, "Has the power of bringing men to England increased in the last twenty years relatively to the power of resisting their power of coming here?" In the adjourned discussion on Mr. Harcourt's paper, Captain Selwyn, R.N., showed clearly that Germany possessed a fleet of transports in the North German Lloyds steamers, and one or two other smaller lines quite capable of transporting a large body of troops to our shores, an army greatly superior to our own forces in point of numbers, and, judging from the recent campaign, at least equal to ours as regards bravery, efficiency, and discipline. This view was corroborated by Colonel Baker and Sir Frederick Arrow, in letters to the *Times*, and by several other eminent men competent to express an opinion upon this point. It does not appear to be doubted that in the event of our navy being unavailable for defence purposes, it would be quite feasible for Germany to land a very considerable force in England, Scotland, or Ireland, by means of vessels now used in her Mercantile Marine. One established case is sufficient. The fact is clear that we are not completely secure from foreign invasion; and defence against one is defence against all. It is not necessary, therefore, for the present to pursue the investigation as to the facilities for attacking us possessed by other Powers.

With regard to the question of defence, we take occasion to observe that in the recent discussion we have not discovered a single new thought, that is to say, we have not found one idea which has not been in men's minds for years past. As we call to mind the various opinions that have at different times been expressed on this subject of defending our shores, we recognise in the ideas now ventilated many old friends which have lacked strength or opportunity to make themselves prominently noticed before. A vague feeling of insecurity has long been lurking in many a Briton's mind, and has revealed itself occasionally in expressions of opinions identical with those which have now attained so much importance. The fears now expressed as to the possibility of invasion, the remedies suggested in the way of coast defence, the doubts cast upon the efficiency of our ironclads, the injured tone adopted by many speakers and writers when dealing with this subject, are all clear indications that the national mind is ill at ease; that in view of the remarkable successes of Germany in the late war, it is open to doubt how far Great Britain can claim to be foremost among the nations, and whether she is so strong in her superiority as to be perfectly secure from all foreign invasion. This is the doubt which is operating to cause so much anxiety amongst us. We have also been alarmed by naval disasters of unusual magnitude and

fearful consequences ; we have become aware that other nations are competing with us in the struggle for commercial and social superiority ; we have been appalled by the crushing defeat of a country whom we regarded as next best to ourselves, and everywhere around us we observe that the nations are marching on, and it is not apparent that we move along at the same rate and maintain our lead. It seems to be the natural result of these things to shake our self-confidence, and then up springs doubt and fear, and so we are tossing about on a sea of anxiety. It would be worse than useless, we think, to impute blame to any particular administration on account of this condition of popular feeling—it would be folly. But it is the duty of Government to take cognizance of such a feeling ; to endeavour to restore the national confidence, and to show to the world that Great Britain is not asleep, and will not permit herself to be at the mercy of any other country.

Regarded in this light, we must hope and believe that the representatives of the people are alive to the condition of things, and that the questions now mooted concerning coast defence, the arming of our fishing population and coastguard, the improvement of internal communications for military purposes by railway and telegraph, the development of our reserve forces, will receive that careful consideration from the authorities which their importance demands.

If there is one point more than another in connection with this subject which we would urge upon the consideration of our readers, it is the question of our Naval Reserve forces. Several times we have drawn attention to this point, particularly in an article on British Ships and British Seamen in our March number of last year ; and we take this opportunity of reiterating our opinion that if the sailors of our Mercantile Marine were made available for defence purposes, and we are firmly convinced it is practicable to do so, one great source of uneasiness as to the manning of our fleet in case of war, would be effectually disposed of. We think that this important point should receive a large share of public consideration.

We earnestly hope the present Government will have regard to the significance of the recent discussion, and to the various opinions expressed by veterans in both services on the subject. We sympathise with Mr. Harcourt's desire to be secure, and welcome his expression of the general feeling. We cannot agree altogether with his views, because it is clearly demonstrated that invasion of our shores is practicable under conditions which are certainly not outside the range of possibility ; and it is impossible to say when we may not be involved in an unexpected war. But this does not detract from the service rendered by Mr. Harcourt in helping us to realise the phantom which has haunted us so much of late years, and to remove our ideas concerning the national safety

from the region of surmise and mistiness,—in which small dangers loom large and terrible,—to the land of light and clear vision, where weaknesses are readily seen, and remedies quickly suggest themselves to those who desire to find them and who look for them.

PROPOSED STEAM-ROUTE ROUND AFRICA.

THERE is no part of the world, so near to Europe, of which less is generally known than the East Coast of Africa. It lies, as it were, in a backwater between the two great streams of commerce, which flow from Europe to India, China, Japan, and the Australian Colonies; the one round the Cape, and the other through the Red Sea. Till Dr. Livingstone was lost (happily to be found again), the names of Zanzibar and Mozambique were mere echoes of the schoolroom to the majority of Englishmen, and we doubt if, even now, one out of ten educated men could tell under whose dominion Zanzibar is, and under whose Mozambique, or even their relative positions on the East Coast of Africa.

This immense district, extending from Cape Guardafui to Delagoa Bay, is still, to a great extent, in the hands of native chiefs; but the Arabs have, in the great district called Zanzibar, and also in Mozambique, penetrated into the interior, and founded towns, and opened commerce. Owing, no doubt, partly to the constitution of the Arabs, being better fitted to withstand the climate, which is extremely unhealthy for Europeans, and the little scruple with which they keep the natives in subjection, they have been more successful than the Portuguese, who, though they lay claim to the whole district of Mozambique, are unable to penetrate into the country beyond the reach of their own guns. Hence the commerce of Zanzibar is now much more developed than that of Mozambique, and the result, as shown by returns is, that, whereas the imports and exports of Mozambique do not exceed £200,000, those of Zanzibar exceed £1,500,000. Zanzibar, the metropolis of the Iman of Muscat's dominions on the East Coast of Africa, is, in fact, the chief market in the world for the supply of ivory, gumcopal and cloves, and there is no doubt that its trade might be very greatly developed.

Besides Zanzibar and Mozambique, there are to be considered, in connection with any scheme for opening up the trade of this part of the world, the Islands of Madagascar, Mauritius, and Bourbon, and the Comoro Islands, where a great traffic lies waiting for a chance of development.

If the experience of the last quarter of a century can be trusted, the quickest and surest way to promote civilization and commerce, is to establish regular steam communication with the civilized world. Without this, there is little chance of the development of the magnificent resources of East Africa, which, from its climate, and the prejudices of the Arabs against "infidels," is at present hermetically sealed against European enterprise in the interior.

The Colonies at the Cape are more immediately interested in the question than Great Britain itself. To them the opening up of the trade of the East Coast, and the establishment of regular steam communication with Aden, are matters of the first importance. At present they are isolated to a degree difficult to realize, when we consider that they have regular communication with Europe and India; but what was good communication a few years ago, is comparatively bad now. Steam and electricity have seriously altered the relative commercial advantages of various places. India, with her telegraph, is now in daily communication with England, the Cape cannot communicate under thirty-six days; and if she wishes to telegraph to India, she must send her message by steamer to England. Again, though the Cape has regular steam communication with England, she has not with India, so that commercial information reaches her too late for her to compete successfully with countries less remote. It is, indeed, quite unnecessary to prove how valuable to the interests of Cape Colony would be regular swift communication with that vast stream of intelligence and commerce which flows to and from the east, through the Red Sea.

It has been proposed by Mr. Edgar Layard, lately Her Majesty's Slave Trade Commissioner at the Cape of Good Hope, and Mr. D. C. Stevens, a gentleman resident at the Cape, that a new route through the Suez Canal should be used by every alternate steamer of the Union Steam Ship Company; Mr. Stevens, advocating the plan from a mercantile point of view, and Mr. Layard in the more general interests of civilization and humanity. Mr. Layard believes that as the traffic in produce increased, the slave trade would decline. He thinks that the inland slave trade would diminish to the small stream necessary to supply a domestic institution, and that even this would in time yield to the greater advantages of legitimate trade.

The eastern and western routes proposed, are thus described by Mr. Stevens, in a letter to the *Cape Argus* :—

"One steamer could leave Plymouth, calling at Madeira, St. Helena, Table Bay, Algoa Bay, Natal, Mozambique, Zanzibar, Aden, through Suez Canal, to Brindisi (Southern Italy); the steamer would then pursue her course from Brindisi, past Gibraltar, and back to Plymouth. The object in calling at Brindisi is to land passengers, who could go by rail through Italy, &c."

"The other fortnightly steamer could leave Plymouth, pass Gibraltar, up the Mediterranean (calling at Brindisi to take up passengers and mails), through the Suez Canal, to Aden, and so on back to Plymouth."

"Each steamer would make a complete circuit of Africa in an opposite direction to the other; and, by goods being conveyed in one bottom, transshipment would be avoided."

By this arrangement Mr. Stevens calculates, that by sending telegrams to Aden, the Cape would be able to communicate with England and America, on one side, and with India, &c., on the other, in seventeen days.

The advantages of the scheme are so obvious, that its realization can only be hindered by questions of capital. That it would "pay" ultimately, there can be little, if any, doubt, but that it would pay immediately, is not by any means so certain. Even its most earnest advocates think that the undertaking would have, at first, to be nursed by subsidization.

As far as we can judge, from the information which has reached us, there appears to be a prospect of subsidies being offered by the Portuguese Government, the Sultan of Zanzibar, and our Colonies, and though we think that all subsidies are objectionable on principle, we should be glad to see the scheme carried out by this means, if others are impracticable.

The *Cape Argus*, in a sensible article on the subject, speaking of the high rates charged by the Suez Canal, suggests that the new line from the Cape should have its terminus at Aden. We are much inclined to agree in this suggestion for the following reasons. The eastern or longer route is not likely to be so popular with passengers as to make up the difference of the expense of passing through the Suez Canal; and with regard to the goods, which it would be, no doubt, desirable to carry through without transshipment, there is to be considered the fact, that the cargo from Africa, if not from Europe, will partly consist of goods for India, which must, under any circumstances, be transhipped at Aden.

At all events, it would be the lesser venture, and one which might, we think, be safely made by any company, without subsidies. The experience of the Royal Mail Company in the West Indies, and the Pacific Steam Navigation Company on the West Coast of South America, are sufficient to prove how quick is commerce, even in less promising districts, to spring up when adequate facilities are offered.

One fact of great importance has yet to be added, viz., the finding of coal at Zanzibar. Coal is now dearer at the Cape of Good Hope than at Aden, but if the Zanzibar coal is plentiful, and of fairly good quality, the difficulties in the way of making the venture pay, would be reduced to a minimum. We also believe that supplies of ships' provisions, cattle,

fowls, &c., can be procured cheaply on the route. Advices from Madagascar and the Comoro Islands assert that a constant supply of valuable cargo can be depended upon, and we have no fear but that the line, once started, will find more work than it will be able to do. With regard to both the English and Dutch Colonies at the Cape, the development of trade in an eastern direction may be expected to produce astonishing results.

LLOYDS REGISTER AND THE GREAT STEAM LINES.

A correspondent sends the following :—

To the Editor of the Nautical Magazine.

SIR,—Being struck with the statements of your correspondent "Blue Mountain," in the March number of the *Nautical Magazine*, as to the amount of patronage "Lloyds' Register of British and Foreign Shipping" received from the "Great Steam Lines," I imposed upon myself the solution of some of the questions thus raised.

I therefore consulted "Lloyds' Book" and the "Liverpool Book," which, particularly the latter, afford all the information available at the present time. Thinking the simple facts, as they affect Lloyds' Register alone, would not warrant me in asking you to publish them, I have collected the information and tabulated it so as to answer the questions placed at the head of the following tables, which embrace facts relating to the largest vessels in the Mercantile Marine of Europe, to the relation of the two English Registries to the Great Steam Lines, and their relative influence upon them, as that may be gathered from the number of large vessels which comply with the societies' rules for classification.

As the Liverpool Book (the underwriters registry for iron vessels) only came before the public in 1862, it can only be placed in competition with Lloyds from that date; hence the period of time taken for comparison must be from 1862 to 1871, eleven years. This will not place Lloyds' Register at a great disadvantage, as there is only one vessel standing in it as being built and classed prior to 1862, and that is a vessel built in 1861; this vessel will be placed to the credit of Lloyds in the tables given below. Two vessels built before the appearance of the Liverpool Book, and since classed in it, are placed to its credit in the following tables. Of the whole number of large steamers now afloat, only some 86 of those comprised in the following tables were built before 1861. I will only further premise that I have not reckoned any vessel as a large vessel that is at all under 300 feet in length, as that is the smallest size

fit for the duties of any of the "Great Steam Lines." The date to which the following figures are brought down, is February, 1872.

TABLE 1.—How many steam vessels are there of, or over, 300 feet in length? What are their actual dimensions as to length? How many of the same dimensions?

LENGTH IN FEET.			NUMBER.
800 and under	320	...	81
820	"	880	48
880	"	840	87
840	"	350	19
850	"	360	17
860	"	370	21
870	"	380	18
880	"	400	18
400	"	420	8
420	"	440	6
440	"	450	1
450	"	over	2

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TABLE 2.—How many are owned by foreigners? How many are owned by British companies? How many are owned by British firms?

OWNERS.	NUMBER.
French companies	26
German do.	17
Dutch do.	3
British do.	135
British firms	85

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TABLE 3.—How many are owned by each of the British "Great Steam Lines?"

COMPANY.	NUMBER.
Peninsular & Oriental Co.	27
Cunard Co.	16
Inman Co.	18
National Steam Ship Co.	13
Ocean	12
Allan's	11
Royal Mail Co.	11
Pacific	9
Anchor Line Co.	9
Guions Co.	7
Oceanic Co.	7

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TABLE 8.—How many of the whole number of large steam vessels are, or have been, classed in Lloyds' Register? How many in the Underwriters' Registry for Iron Vessels? (Liverpool Book.) How many are classed in both books? What are the dimensions of these that are classed in either book?

Length in feet.		Number classed in Lloyds.	Number classed in Underwriters' Registry.	Number classed in both.
800 and under	320	16	19	6
320	330	12	11	4
330	350	6	14	...
350	360	2	5	...
360	370	4	4	2
370	380	0	3	...
380	390	1 lost	9	1 now lost
390	400	0	5	...
400	410	0	3	...
410	425	0	4	...
		41	77	13

Of the whole 266 there are, it will be seen, 41 standing as having been classed in Lloyds and 77, as having been classed in the Liverpool Book.

TABLE 5.—In what years were the classed vessels built? How many in each year?

Built in the year		Classed in Lloyds.	Classed in Underwriters' Registry.
Before	1862	...	2
In	1862	...	3
"	1863	...	3
"	1864	...	5
"	1865	...	7
"	1866	...	3
"	1867	...	8
"	1868	...	5
"	1869	...	8
"	1870	...	18
"	1871	...	20
		41	77

The immediately foregoing table (5) indicates a steady lead in number by the Liverpool Book through the eleven years covered by the table, the preceding table (4) shows that it was in the smallest sizes of vessels that Lloyds sudden increase in 1871 took place, as 28 out of the whole 41 now

* These two vessels were, after being largely strengthened, classed in the Liverpool Book, and are two out of the three entered as classed in Liverpool Book, in 1866, and the only two built to Lloyds' rules in that year.

standing classed in Lloyds are *under* 890 feet in length, while 47 of the 77 classed in Liverpool are *over* that length—(see table 4.)

The following table clearly shows the lead, of the Liverpool Book, to have been, not merely a lead as to numbers, but also as to dimensions, which have steadily increased for the last ten years.

TABLE 6.—What are the greatest lengths built to class in each year with each of the two Registries?

Year built.	Greatest Length of Vessels Classed.		
	Lloyds.		Liverpool.
1861	...	846 feet	... feet
1862	...	835 "	840 "
1863	...	861 "	341 "
1864	...	818 "	870 "
1865	...	369 "	882 "
1866	...	828 "	371 "
1867	...	none	890 "
1868	...	311 "	850 "
1869	...	808 "	400 "
1870	...	849 "	420 "
1871	...	351 "	420 "

1872 a length has been reached this year by the Liverpool Book of 452 ft.

It is very remarkable that the classing of large steamers with Lloyds, was nearly wholly omitted until 1870. In that year and the year following, a considerable increase in number and a small advance in dimensions is noticeable. It is much more remarkable that *February*, 1870, is the date of Lloyds new rules, which are, it is supposed, an abandonment of the principles and scantlings of the old rules, and an imperfect adoption of those of the Liverpool Book.

A word or two more as to the "Great Steam Lines." Your correspondent was too hard on Lloyds; for there are nine vessels standing in Lloyds' Book that belong to those "lines"—viz., one Inman, four Anchor line, one German, and three Dutch steamers. And the largest vessels in progress for the Anchor line, class in both books, two of those being 400 feet long.

"Blue Mountain" was not just either to the Liverpool Book; for the National, the Anchor, the Pacific, the Guions, and the Oceanic lines, have all come at first before the public under the classification of the Liverpool Registry, and all except the National continue to class in it. In addition to these, the private firms owning the largest vessels afloat, after those of the Great Steam Lines, build and class all such vessels in the Liverpool Book. And the largest steam ship firm in Europe builds and classes every vessel therein; so that, at the present moment, the

largest vessels in progress, either for a private firm or public company, are being built to class with Liverpool Book.

Yours obediently,
VERITAS.

June, 1872.

SKETCH OF ZANZIBAR AND SLAVE TRADE.

(Continued from our November Number of last Year.)

THE chief source of the wealth of Zanzibar is derived from the slave trade. On this subject there is a difference of opinion; some say that without its slave trade, Zanzibar would at once sink into insignificance, while others assert that this is not the case, but that the trade in ivory, cloves, &c., would be sufficient to support it, and to this latter opinion I am inclined to adhere. But this is a wide question, and one which I will not attempt to discuss in the present brief sketch. I will, therefore, pass on to relate what I myself saw of the slave market and the slave trade, and then put together the few notes I have made on slavery and the efforts made to suppress it. There is that in the word "slave" which is terribly repugnant to the mind of an Englishman, and rightly so; but our ideas of slavery have been chiefly formed from such works as Mrs. Beecher Stowe's "Uncle Tom's Cabin," and ghastly prints of sallow, thin men, in large hats, beating wretched negroes to death with things like flails, supposed to represent whips.

Undoubtedly, great atrocities have been committed by slave-owners, and awful miseries have been undergone by slaves. But there are slaves and slaves, and slavery at Zanzibar is very different from slavery in South America and the West Indies.

I fancy I hear some one at this point exclaim in horror, "Here is actually, in the nineteenth century, in this age of liberty and progress, an article written in favour of slavery." But, if you will read on a little further, you will find that nothing is more remote from my intention. And here, that I may not be misunderstood, I will take the opportunity of saying that my object is simply to state what I have seen and heard of the Zanzibar slave trade, and leave my readers to form their own opinion and pass their own judgment upon it. At the same time I would impress upon them that the picture is not totally without its bright side.

The slave market opens at about four o'clock every afternoon. Accordingly, at five on the day of our arrival, accompanied by a friend, I set

off in search of it. After a quarter of an hour's walk from the landing-place, through a number of narrow, intricate streets, our guide conducted us into an open kind of square, and we found ourselves actually in the slave market we had been talking of and thinking of so much during the voyage out. I shall not easily forget the scene. Huddled together in groups of twenty or thirty, about 200 men, women, and children sat crouching on the ground, not the slightest expression appeared upon the countenance of any one of them, and here they sat, hardly moving a muscle, except when compelled to gather closer together to make room for more unfortunates who every now and then arrive, ten or twelve at a time, to take their places by them. I never saw a collection of more wretched-looking beings; they wore nothing but a rag round their waists, so that their emaciated condition could be seen in all its horror. Many of them were literally only skin and bones. Some of the women had infants in their arms, but it is unnecessary to enlarge on these revolting details, enough has been said to give an idea of the horror of the spectacle; suffice it to say, that I never saw any over-driven cattle so utterly devoid of bodily or mental animation as these poor creatures appeared to be. While I was looking round, completely horror-stricken by what I saw, as my eye wandered on from group to group, a Persian soldier took hold of a boy of about twelve years old, and, raising him by the arm, began to turn him about, feel his muscles, and look at his teeth, and, having examined him carefully, allowed him to sit down again, and passed on to inspect another; this was before the sale began, and similar scenes were going on in all parts of the market. One man, too lazy to use his hands, thrust his cane into the mouth of a young slave, and, raising his lips by these means, made a careful investigation of his mouth and teeth. The sale soon began, and the wretched creatures were sold off, some in lots and others individually. They fetched prices varying from 10 to 150 dollars. The highest prices were paid for some women carefully dressed and painted, and hung over with a quantity of jewellery, and who, by their plump, healthy condition, formed a striking contrast to the poor, half-starved wretches lying about around them.

Sick and disgusted at the revolting scene, we took our departure, heartily glad to escape from the horrid sights and filthy odours of the place. On the way back we saw chalked on the wall of a house, instead of "Griffiths, the safe man" or "No Popery," two rough drawings of slave dhows, with their holds and decks crowded with slaves, which was strangely characteristic of the atmosphere of the place. After witnessing all this, I returned to the ship with my blood boiling with indignation, and longing to be able to do something to alleviate the miseries of the poor wretches I had just seen. In this frame of mind, as I walked along, I came upon a group of men building a house, singing and laughing,

looking sleek and fat, and apparently completely happy and contented with their lot. "What are these men?" I enquired of my guide. "Slaves," was the answer. "What!" I exclaimed in astonishment, "were these men sold in the market in the same condition as those poor wretches we have just seen." "Yes, sir, only now they have plenty to eat," replied the man. I was as much struck by the health and well-to-do appearance of these men, as I had been horrified by the lean condition of those I had just seen sold in the market, and, finding the two things difficult to reconcile in my mind, I determined to gather as much information on the subject as I was able during my few days' stay, and the result of my investigations is as follows:—The trade is carried on chiefly by northern Arabs. These men make long journeys into the interior of Africa, provided with beads or ore, which they give in exchange for human beings. Sometimes children are sold by their parents. An instance of this is a little boy now in the Bishop's School, liberated, I think, by H.M.S. *Dryad*. He told the Bishop that his family was starving, and that his father had given him to a merchant in exchange for some rice; he seemed to have been well pleased with the arrangement, for, as he said, "With my father I had nothing to eat, but after I was sold I had plenty;" an unanswerable argument. They are not over scrupulous in the means they use to obtain possession of slaves, and I believe have been known to incite one tribe against another, and take the prisoners of war as a reward for rendering their assistance. When they have collected together a large enough number they set off for the coast, and, as they penetrate far into the interior, they have to make a journey of sometimes two months' duration to reach it. The poor slaves are driven in gangs, carrying loads of ivory, and suffer terribly from hardships and fatigue; many of them fall sick and die on the road, and they generally reach the coast greatly diminished. There they are embarked in dhows and taken across to Zanzibar, suffering a great deal from want of food and over-crowding. This accounts for the terrible condition they are in when they are disembarked and taken to be sold in the market. But once sold, their sufferings are at an end; they are well fed and cared for, and soon become fat and healthy. The ill-treatment of slaves by their masters is rare, and, under certain circumstances, a slave can demand to be resold in the market if he has been ill-used by his master, and, when thus resold, he cannot be bought again by the master he has just left. Far from being in the miserable, dejected condition in which some people imagine them to be, they are, as a rule, perfectly happy and contented with their lot, and I was confidently assured that were the slaves liberated by our cruisers and landed at Aden, Bombay, and Leyschelles to be given the option of remaining free or returning to Zanzibar and becoming slaves again, they would, almost to a man

choose the latter alternative. In proof of this the following anecdote was related to me:—When the Bishop of Zanzibar was engaged in building a house for the reception of his pupils, he hired a number of slaves to work for him, their master allowing them to do so on condition that they were to pay a certain portion of their wages to him. This they continued to do for some time, when their master suddenly died, leaving no directions with regard to his slaves. The slaves then came to the Bishop and said, “Our master is dead, you are now our master.” The Bishop told them that, in that case, he gave them their freedom; but they refused to accept it, saying, “We have nowhere to go to; you must be our master;” and he had considerable difficulty in getting rid of them. This, at any rate, proves that their condition as slaves is not so very unendurable. Nor does the fact of a man being a slave prevent his rising in the social scale. He can make an arrangement with his master to allow him to work for another man, and pay his master a certain percentage on what he earns, or else the master will give his slave two days in the week, in which he may work for himself. In this way slaves may make money, and, in their turn, own slaves, while they still remain slaves themselves. The master is bound to protect his slaves, and, in consequence of this, voluntary slavery is common. Some of the chief men of the State have made themselves the slaves of the Grand Vizier, in order that they may reap the advantage of his protection and influence; and this custom runs downwards through all grades of society. From this it may be seen that to be a slave here is considered no disgrace, but, on the contrary, in some cases, is very advantageous. It is the word “slave” that is offensive to us, but call them by any other name and their condition is much the same as servants: they work and receive food and lodging in return instead of wages. I am now speaking, of course, only of the domestic slavery of Zanzibar—that is to say, of those slaves employed within the limits of the Sultan Borgaschi’s dominions. On an average, about 20,000 slaves are imported from the mainland annually, and, rightly speaking, about 8,000 of these are bought by subjects of the Sultan to be employed in his territories, leaving about 17,000 to go to the foreign slave markets of Arabia and Persia. There is a tax of about two dollars on all slaves entering or leaving Zanzibar, and of four dollars on those shipped from Guiloa to Lamoo, so that the annual income derived from the slave trade by the Sultan may be estimated at an average of about £13,000.

And now a few words about the efforts of the British Government to suppress the slave trade by means of cruisers on the coast and treaties with the Sultan. The existing treaty with the Sultan prohibits the foreign slave trade—that is, the exportation of slaves from Africa to any foreign port, but sanctions domestic slavery, that is to say, it allows slaves to be

transported from one port in the Sultan's territory to another, Lamoo being the northern and Guiloa the southern limit. But this treaty has rather aided than suppressed the foreign trade, for dhows, full of slaves, provided with papers for Lamoo, according to its conditions, can sail to the furthest northern limit of the Sultan's dominions totally unmolested, and there wait an opportunity of giving them the slip or else land the slaves and, marching them some way along the coast, re-embark them higher up, and ship them to Arabia or Persia. Our cruisers are employed upon the coast during the slave season, which is, while the monsoons are blowing, roughly speaking, from April to November, to capture slave dhows, but they are too few to be at all efficient in checking the trade to any great extent, hampered, as they are, by the present treaty, and they have hitherto only succeeded in capturing a very small percentage of slaves. Indeed, the result of these half-and-half measures instead of alleviating the miseries of the slaves, naturally add to them, for though our ships are not numerous enough to check the trade, they are quite sufficient to make the transport of the slaves to a certain extent a risky venture, and their presence often keeps gangs of slaves waiting on the coast enduring great hardships, unable to be embarked for fear of being captured, and when the traders do get a chance they pack the unfortunate slaves so terribly close to make the run worth risking, that the poor creatures often suffer horribly. Therefore, as matters now stand, it would be far better for the slaves if we did not interfere with them at all. This was the state of affairs when I visited Zanzibar in September last. But there is another treaty with the Sultan pending, the chief points of which are :—

I. That slaves shall be shipped from one point only on the African coast, Dar Selam.

II. Zanzibar to be the only port for the reception of slaves with liberty to transport them to Pemha and Mombaga only.

III. That the number of slaves exported shall be limited to the requirements of the inhabitants of Zanzibar, Pemha, and Mombaga, the number gradually to decrease and finally cease altogether.

IV. Each vessel to have a mark on her hull and sails, and have a pass from the Sultan.

V. The public slave market at Zanzibar shall be closed.

VI. The Sultan shall engage to punish anyone connected with the slave trade.

VII. Natives of Indian States under British protection shall be forbidden to possess slaves after a certain date to be fixed by Government, and meanwhile they are to buy no more.

VIII. A stipulation shall be contained in the treaty for providing for the eventual entire suppression of the export of slaves from the main-

land. (See Report of Select Committee on the Slave Trade, West Coast of Africa, printed August 4, 1871).

It is, of course, an open question how this treaty will work if it be agreed to. There can be no doubt that the Sultan of Zanzibar has sufficient resources of trade, without slaves, to support his dominions if they were developed, but in my humble opinion it will be no easy task to eradicate a *custom* which is so intricately interwoven into every grade of society. A great deal more might be said about slaves at Zanzibar. Indeed, the system of slavery is a most complicated one; but the present paper does not pretend to be a complete account, but merely a brief sketch gathered from a few notes made from personal observation.

Before concluding this sketch, I would just allude to the missionary work at Zanzibar. Bishop Tozer has, after several years of labour, established a school for boys and girls at Zanzibar, which is in capital working order. I think he has somewhere about 90 scholars, liberated slaves, obtained either from their masters or from dhows taken by our cruisers. There is a good large house for them in the town, a portion of the ground floor of which has been converted into a chapel, and there is also another house in the country. The object of the Bishop is to educate natives for missionary work on the coast and the interior of Eastern Africa; there are already two sub-deacons. I attended Divine Service at the chapel and was much struck by it; the Bishop performed the service, and the lessons were read by a native. He read remarkably well, with much expression and feeling. The singing was very good. The choir is composed of some of the little negroes, who looked very quaint in their red caps and white gowns. They sang very heartily, accompanied by a harmonium. The Mission is in a most flourishing condition so far as funds are concerned, but men to assist in the work are much needed. There is also a Roman Catholic Mission, but its headquarters have been removed from Zanzibar to the coast. The fashionable religion is that of Mahomet. There is another kind of religion, but it is very difficult to get any information on the subject as they keep it very secret. Its votaries seem to worship out in the country. Trees may be seen with offerings of rice spread out beneath them and a fire burning, but nothing reliable has been discovered about it.

WHY THE OLD TIMES WERE GOOD.

A JUMBLE.

In the old, old times long passed away,
 The men were brave and women good,
 And all arose at the break of day,
 As the wise, and the healthy, and wealthy should.
 Though the only steam the woodlands knew
 Was mist that rose in the evening air
 From swamps and fens, where fevers grew,
 That spread o'er "countrie" to "citye faire."
 Though roads were few, and gorse, or wood
 O'erspread the face of this Isle of ours;
 Though acorns for pigs and men were food,
 And Barons were lodged in holds and towers.
 Though telegraph wires didn't flash the news;
 Though passenger trains hadn't come to light;
 Though steamers were not, with paddles and screws,
 And ere Galileo had taken a sight.
 Though ladies rode all cock-a-stride,
 Like men of to-day in Rotten Row;
 Though apples called crabs none dared deride,
 And bland and mead were quite the go.
 Though primates wore clothes until stiff with dirt,
 And with parasites fearfully overrun;
 Though each good man wore a horse-hair shirt;
 And of soap and soda there were none.
 Though folk cared nought for life-boats and rockets,
 Nor of sailors old who ought to be nursed;
 Long swords were better than very long pockets,
 And claimants were "dusted" instead of burst.
 Though swells of the day wore wrought "Iron tights,"
 And swellesses sported long thin gowns;
 And serfs the oddest and queerest frights,
 Wore sacks with holes for their arms and crowns.

Though craft called "shippes" kept near the strand,
And during fine weather just ventured out;
And monks and nuns had the fat of the land,
As they will have again when WHALLEY goes out.

Though the name of the peasant was Gruth or Swifa,
And not as it is now, Snooks or Jones;
Though a vapour bath was a thing to sigh for,
And 'stead of rifles they'd arrows and stones.

Though the greatest sport to a man reserved
Was his nearest friend to scrag or pot;
Though game instead of mankind was preserved,
Though serf as oft as game was shot.

Though, 'stead of sports at the Derby and Oaks,
A swell poked his friend with a long clothes-prop,
And delighted in giving him ugly pokes
Till out of his saddle he made him drop.

Though no Palace of Crystal was made by Paxton,
(Where Sydenham females on Saturdays flout);
Though Wynkin de Worde or William de Caxton
Had not brought the first periodical out.

Though for canes and sticks were axes and maces,
And toes of shoes to the knees were worn;
They hadn't then thought about Epsom races;
The Zoo wasn't known, nor Smith of Cremorne.

Though much that to-day we in reverence hold
The times we've referred to had not brought about;
It is said that those times were good and old,
Of their goodness, I ween, no man can doubt.

For in those days the Dilkes were not Barts;
And Odger and Bradlaugh would not have been "lights,"
And the girls had sense not to break the hearts
Of their swains, by twaddle of "Woman's Rights."

In God alone men sought to believe,
As endowing our race with soul and shape;
And preferred claiming kinship with Adam and Eve,
To ranking as cubs of an ape-ess and ape.

NOMINAL HORSE-POWER.

THE paper on "Nominal Horse-power" that appeared in our April number was written at our request to open up the way towards a settlement of a definite standard, and thereby to elevate "Nominal Horse-power" to the rank of a standard measure. By employing the expression "Nominal Horse-power" in the Merchant Shipping Act, our legislators have given it a place in that rank; but no standard of this measure has been recorded or lodged for preservation at the office of the Exchequer at Westminster along with the standard yard. We have, however, to apply this measure "Nominal Horse-power;" and it is wise, therefore, to seek for a Rule or Standard with Nominal Horse-power marked on it.

We have been favoured with several communications on this subject, amongst others with a suggestion that "Nominal Horse-power" might be taken as one-fourth of the full power, indicated horse-power, developed on the trial trip. This rule we understand is that now generally adopted in France. But for the purposes to which we in this country apply the term, where there is a parliamentary force and a commercial value attached to it, its quantity should, we think, rather be determined from the fixed dimensions only of the machinery and boilers, and not from experiment. We ought to be able to determine the nominal horse-power before the trial trip takes place, and independently of the quality of the fuel. It would never do to fix the number of engineers or the class of engineers by trial trip diagrams which have a limit of maximum, but no limit of minimum. The engines could obviously be worked to give any horse-power less than the maximum.

We have asked Mr. J. McFarlane Gray to reconsider his paper, and, if possible, to embody in it the suggestion as to one-fourth of the full power. He has done so, and at the same time has taken the opportunity to introduce length of stroke as an element of the calculation. This addition makes the results more nearly approximate to a fixed proportion of the power developed at the average different speeds of piston—viz., nearly one-fourth of the indicated horse-power as suggested, which is about equal to our present nominal horse-power. The rule thus amended is also better adapted for a standard of cost, the effect of length of stroke on cost being, we are advised, very nearly the same as that produced by it in this rule.

RULE.—Add together the squares of the diameter of the cylinders in inches, multiply by five added to the length of stroke in feet, divide by 400, and add *four* times the total width of furnace, when there is jet condensation; or *five* times that total width when there is surface condensation.

Or expressed in symbols :—

$$\frac{D^2 (L + 5)}{400} + 4 F = \text{N.H.P. jet condenser.}$$

$$\frac{D^2 (L + 5)}{400} + 5 F = \text{N.H.P. surface condenser.}$$

In the above, as also in Mr. McFarlane Gray's paper on this subject in our April number, D^2 is the *sum* of the squares of the diameters of the cylinders, but *excluding* the high pressure cylinders in compound engines.

The first of these rules should have had $4\frac{3}{8} F$ to agree with the formula given in April, but it is thought better for simplicity to take the number *four* without the fractional addition.

As examples of the working of these rules, take

I. A pair of 60-inch cylinders, 8 ft. stroke, 12 furnaces, each 8 ft. 2 in. wide, jet condenser :—

60	5	$8\frac{1}{2}$
<u>60</u>	<u>3</u>	<u>12</u>
3600	8	88
<u>3600</u>		<u>4</u>
7200		152
<u>8</u>		<u>144</u>
4,00	<u>576,00</u>	296 N.H.P.
	144	

II. A compound engine, one cylinder 68 inches, the other 86 inches, 4 ft. 6 in. stroke, eight furnaces, each 2 ft. 9 in. wide, surface condenser.

Here we do nothing with the 86-inch cylinder, we take only the low pressure cylinder :—

68	5	2.75
<u>68</u>	$4\frac{1}{2}$	<u>8</u>
54.4	$9\frac{1}{2}$	22.00
<u>408</u>		<u>5</u>
4624		110.00
<u>9.5</u>		<u>109.82</u>
23120		219.82 N.H.P.
<u>41616</u>		
4,00	<u>489,28.0</u>	
	109.82	

We again submit this scheme of Nominal Horse-power Standard to our readers, and shall be glad to have the benefit of the criticisms of those practically familiar with this subject. Mr. McF. Gray in making

the above suggestion, is acting in this matter for us merely as an arithmetician, and he has no desire to go beyond merely assisting in this deliberation.

NOMINAL HORSE-POWER.—The following has been forwarded to us by the Council of the Institution of Naval Architects:—"Board of Trade, Whitehall Gardens, 22nd March, 1872.—Sir,—I am directed by the Board of Trade to enclose some copies of a Memorandum on 'Horse-power' of Steam Engines. Representations have been made to the Board that the term 'Nominal Horse-power' conveys no definite meaning. This term occurs in Section 5 of the Merchant Shipping Act, 1862, of which a copy is enclosed. The Board of Trade will be glad to receive any observations on the subject with which the Council of the Naval Architects may be able to favour them. If some understanding can be come to on the point, a definition of the term might be agreed to which will be accepted not only by the manufacturers and users of engines, but by the Legislature in the event of the term 'Nominal Horse-power' being re-retained when the Statute is revised.—I am, (Signed) THOMAS GRAY. "To The Secretary, Naval Architects, Adelphi."

"Institution of Naval Architects, 9, Adelphi-terrace, London, W.C., 4th June, 1872.—Sir,—In reply to your letter (M) of the 22nd March, in which you ask for certain advice with respect to the term Nominal Horse-power, I am directed to inform you that the subject has been carefully considered by a Committee of the Council of this Institution with the following results:—The Committee were unanimously of opinion that the term Nominal Horse-power, as at present ordinarily used for commercial purposes, conveys no definite meaning. They were also unanimous in considering that the proposals contained in Mr. MACFARLANE GRAY'S pamphlet could not be recommended for adoption. The majority of the Committee were of opinion that no formulæ depending upon the dimensions of any parts of the engines, boilers, or furnaces could be relied upon as giving a satisfactory measure of the power of an engine, and that even if the varieties of engines and boilers now in use could be comprised under one general expression for the power, the progress of invention would soon vitiate any such expression or formula. The entire abandonment of an old commercial standard, such as Nominal Horse-power, however inaccurate, must be a matter of considerable inconvenience, and accordingly great attention was given by the Committee to the question whether that standard could not be amended and retained. Among the many plans considered, not one received unanimous or even general approval. That which met with least objection was that the Indicated Horse-power, as ascertained on a trial trip, should be taken either as the Nominal Horse-

power or as a basis for it, being divided by a suitable divisor. The Committee were of opinion that for the purposes of the Act, if any standard at all of Horse-power is to be used with reference to the Engineers, it would be better to name 400 Indicated Horse-power, in place of 100 Nominal Horse-power. The Committee were also of opinion that *all* Engineers of coasting and sea-going ships should be required to pass some examination, and the Council think it desirable that this opinion should be communicated to the Board of Trade.—I have, &c., (Signed) C. W. MERRIFIELD, Hon. Sec. The Secretary, The Board of Trade, Whitehall Gardens, S.W.

COAST FOG SIGNALS.

IN our last number, we briefly alluded to a paper on the above subject, read by Mr. Alexander Beazeley, M. Inst. C. E., at the Royal United Service Institution. This most important and valuable paper is now before us; its length precludes our publishing it *in extenso*, and we therefore shall extract the salient points and publish them for the benefit of our readers. Last year Mr. Beazeley read a paper on this subject, at the Institution of Civil Engineers, a *resumé* of which will be found in our November number, and from the point at which he then left the subject he now takes it up.

The instruments which are the recognised and established means of signalling in fog, are gongs, bells, guns, trumpets, whistles and syrens, and after considering each instrument separately, the author proceeds to enquire to what extent they are severally suited to the requirements of navigation. And this raises the preliminary questions:—What is a fog? In what manner does it affect sound? and, What are the requirements of navigation in connection therewith? The subject of the constituent elements of fog and their effect on sound is then well considered, but space will not allow us to follow the author's investigation. As regards the third question, its special importance demands attention. Mr. Beazeley says the requirements of navigation in connection with fog-signals are as follow:—First, the signal must be distinctly audible, under the most unfavourable circumstances, at such a distance as will enable the mariner to profit by the warning it conveys. Secondly, the direction from whence it comes must be readily ascertainable. Thirdly, it should be of such a distinctive character as to indicate, not only that there is a signal station there, but also what particular station it is. From the details previously given respecting various fog-signals, it will be quite evident that the only instruments possessing sufficient range

to fulfil the first requirement are trumpets, whistles, and perhaps guns. The use of a gun, however, is open to serious objection on account of the severe labour entailed on the attendants in fogs of long duration, and also on account of the necessarily long intervals between the signals. The selection then lies between the trumpet and the whistle, and the evidence respecting the efficiency of both appears to warrant the employment of either ; and with regard to the second requirement of navigation, although it is not intended to assert that these instruments are absolutely reliable in this respect, it is at least certain that they are superior to any other known signal. As regards the efficiency of guns for this purpose, there is not much reason to believe they would be or are particularly effective. The third requirement of navigation, that the signal shall be of such a distinctive character as at once to indicate its identity, is one which equals if it does not even exceed in importance the distinctive character of a light. Very considerable attention is accordingly paid in America to the preservation of a distinctive character in those signals, both by variations in the intervals and duration of the sound, and by the use of different instruments at different stations. Mr. Beazeley proceeded to show that the trumpet, whistle, and syren are well adapted for this purpose. He then observed that it would be in the highest degree satisfactory, were it possible to conclude that in the trumpet and the whistle we possess instruments entirely fulfilling the requirements of navigation. With the exception, however, of the conditions involved under the third head, such is not the case ; and all that we are as yet entitled to say is, that they are superior to any other known instrument. Much additional information remains to be acquired, before we shall be in a position to pronounce either of them to be perfectly efficient and reliable.

He then urged very strongly that further investigations and experiments should be undertaken, to be conducted on our own shores, with a view to the further development of the fog-signal system in this country ; and he submitted a detailed plan for such investigation which may be briefly summarised as follows :—

1. An examination of the relative densities of fogs, involving a series of observations and the application of an optical test ; also a series of observations as to the distance of hearing sound through fog, the instruments to be employed being the gun, trumpet, and whistle. The foregoing experiments to be accompanied by careful barometric, thermometric, and hygrometric observations, at a suitable station in the same locality, in order to establish an additional test of fog, and to afford a means of accounting for any discrepancies which may appear in the results when tabulated.

2. The second series of experiments relates to the determination of the question, whether sounds to be sent against the wind should be

originated near the level of the sea, as is usually considered desirable, or at an elevation, with a suitable depression of the principal phonic ray. For the signals in this series it will be sufficient to employ the gun, the trumpet, and the whistle. Two of each will be required, and will be worked according to a programme drawn out.

3. The third series of experiments relates to the trial of new instruments and appliances, and of various modifications of existing ones. This series would also include experiments relating to the special penetrating power of certain qualities of sound.

4. The first series having afforded the means of measuring the density of a fog, and the second having determined the best method of employing the sound of three principal and typical instruments when sent to windward, the way is now cleared for the fourth series of experiments, the object of which is to determine the effective range of the instruments employed as fog signals—viz., guns, trumpets, whistles, syrens, bells, and gongs. The result of this series of experiments will be to arrange the fog-signals in groups according to their effective ranges, which will determine the suitability of the instruments for different purposes and situations. Some (it is hoped) will be found to possess the ranges requisite for great sea-signals or danger-signals; others will answer for minor signals, such as are suited to points which cannot be reached by a vessel without previous warning of her whereabouts from a sea-signal, or for channels and harbours. From the various instruments composing each group, it will easily be possible to choose those which are most effective or economical, or whose capability of conveying distinctive indications renders them peculiarly suited for alternation with others on a long coast-line. In fact, this series will afford opportunities for a discriminating selection and application of instruments for fog-signals, such as never before has been possible.

These proposals are not brought forward in the bare manner in which our limited space compels us to chronicle them; but they are everywhere accompanied by shrewd, sensible provisions, indicating that the author has considered and dealt with the subject in a most thorough manner. The whole of the experiments have a definite object, and such an investigation, if carried out, would undoubtedly place us in possession of a vast amount of practical and valuable information which we ought to have, and which our position as a maritime nation, possessed of the most widespread commerce and the largest Mercantile Marine in the world, absolutely demand.

Mr. Beazeley certainly cannot be accused of being a mere theorist, or speculator, for on every point he brings to bear common sense and sound judgment, and shows how to practically apply his ideas—a very great merit in any one who undertakes to bring forward a subject that requires some action.

With regard to the person to whom the conduct of the experiments should be entrusted, he says:—"I am decidedly of opinion that an officer in Her Majesty's Navy would be the most suitable. It is also from the Navy that I would recommend the selection of men for the work, their employment upon it being made the reward of intelligence and good conduct; a distinction which, with the addition of a small sum to their pay, would create an active competition for the service. For special scientific advice, recourse should be had to some person appointed by the Government department under whose auspices the investigation is made, and the President of the Royal Society might be invited to recommend some one for the appointment."

In concluding our *resumé* of this important paper, we must express our high appreciation of Mr. Beazeley's care and research, and our hope that his labour may not be resultless.

NAUTICAL SURVEYING.

Paper read at the United Service Institution, on Friday, 14th June.

By Staff-Commander THOMAS A. HULL, R.N.

THE object of this paper was to enable an officer possessing the ordinary knowledge of his duties as a sailor and navigator, aided by the usual instruments found on board every man-of-war, to construct a plan of a bay or harbour, examine the entrance of a river, detect errors in the chart of a piece of coast line, or frame a report on a newly-discovered island, rock, or shoal. Such contributions to knowledge, although standing only in the relation of sketches when compared with finished surveys, still may, in the absence of better information, be of great assistance to his fellow-seamen, and qualify him for employment in a branch of the service, which has been second to none, among the forces of civilisation, in placing and maintaining the British Navy in its prominent position.

The author began by supposing that an officer, having passed his examination as a lieutenant would be anxious to retain the knowledge of navigation acquired in the process, and wish to gain some experience in nautical surveying. This was to be done by what the lecturer termed "educating himself down to it," and mastering such simplicities as everyday arithmetic, since readiness in the first four rules, proportion, vulgar fractions, and decimals are of the greatest use to the nautical surveyor, and are, in fact, necessary to enable him to handle logarithmic tables with ease. The power of the scale and compasses was next treated upon, and the necessity of solving the early problems of navigation by projection as well as calculation; the lecturer showing how in an ordinary day's work,

where a vessel contending with adverse winds has made some six tacks, the water has been triangulated, and the navigator becomes a surveyor without being aware of it. The propositions of the third book of Euclid, by which the position of a floating object is fixed by means of angles measured between known points on the shore, were fully explained by diagrams, it being pointed out in what position the shore points were good, indifferent and useless. The necessity of an officer preparing himself for a nautical surveyor by strict attention to the practice of navigation, was next pointed out, proficiency in the latter being of great assistance in acquiring a knowledge of the former. The lecturer then dwelt with some enthusiasm on the sextant, showing that the possessor of that useful instrument held in his hand the means of making a nautical survey sufficient for the general purposes of navigation, concluding with the remark that "The sextant fixes the sailor's position on shore and afloat, with its assistance the lost end of the Atlantic cable was found, and without it no ocean could be properly sounded, or telegraph cable fairly laid." The equipment of a surveying boat and management of the crew was then treated upon. Plymouth Sound was taken as an example of a harbour to be triangulated and sounded, the entire work to be done by the sextant. The principles of main triangulation were explained, and great stress laid on the necessity of the utmost care being taken in laying the true foundation of the work by exactness in establishing the positions of the early points. The importance of the soundings with the method of their reduction to low water, and methods of first discovering and then examining and fixing outlying dangers, such as the Tinker shoal, were then treated of. A few remarks on the different methods of getting a base were made, but time prevented the reading of many important matters relating to the astronomical work of a survey, the establishment of the tide pole, &c. The last diagram illustrated a method by which a squadron of five vessels anchoring off an enemy's coast, of which they possessed no reliable chart, could at night, by means of boats, form a correct idea of the nature of the coast with the view of landing, bombarding, or otherwise giving trouble. At the end his hearers were cautioned that although nautical surveying from its simplicity might seem suited to the meanest capacity, yet he knew of no profession that required more straightforward perseverance and steady application, adapted not so much to men of genius as to those who possess the rare gift of industry in one particular direction; possessing what Carlyle calls a capacity for taking trouble combined with conscientious labour, shirking and evading no difficulty, completely doing the work in all its divisions, and practising as often as opportunities offer.

He concluded by remarking that although the science of naval gunnery was elaborately taught, little attention was paid to navigation and nautical

surveying, and suggesting the necessity of extending to the latter art a little of the care and encouragement that naval gunnery had so long enjoyed.

"SEAMEN'S CONSULS."

THIS has become a sort of half-pitying, half-contemptuous, designation for those amongst our Consuls abroad, who truly recognise their position as protectors of ignorant seamen, against the collusions between masters and crimps, and the often ill-exerted power of the former alone.

Whatever changes occur in the constitution of states, great and small, there never has been, and never can be, but one form of government on ship-board, namely, a despotism, *pure and simple*; and we cannot imagine how a ship could possibly be ruled upon any other principle. The master is all in all, and rightfully so. But, at the same time, though omnipotent on board, he should, when in port, be amenable to some higher power, or the uncontrolled exercise of authority will surely lead to its abuse.

Far be it, however, from us to adopt "Seamen's Consuls" as a term which at all properly designates their position towards the Mercantile Marine. Neither "Seamen's" nor "Captains'" Consuls should they be. They should be both, impartial, doing their duty by each equally. Both have need of their services; masters are sometimes unjust, but heartily as we sympathise with poor Jack, we cannot deny that he is frequently "bad enough to try the temper of a saint, as the saying is, let alone a master." But what we do adopt is this, that it is much easier to be a Captains' Consul than a Seamen's, and the easiest path is too often followed, so that Captains' Consuls are commoner than Seamen's. And, though we neither approve of one nor the other, we think that this preponderance of authority, on the strong side, is a great evil in itself, and leads to greater. For masters are able very well to protect themselves, and seamen very little, and the abuse by masters of their power, when unchecked, tends to demoralize both themselves and their men, and drives many of our best English sailors to sail under foreign flags.

To take but one instance—viz., desertion; the cases in which seamen desert of their own accord, are, as has been alleged, equalled by those in which they are allowed, or induced, to desert by the master, either to get rid of unpleasant men, or to make a profit out of their wages. No doubt, where wages are high, the master tries as a rule to keep his crew together, but where they are low, and where the ship has to lie idle in port, and the work of unloading and loading can be performed more

cheaply by labourers from shore, the case is altered. Unfortunately, the master has little difficulty in allowing or inducing a man to desert. A sum down, and a holiday, with an intimation that he is not wanted any more, is generally sufficient, and if this will not do, unnecessary employment and bad food, when in port, will often be enough to drive the whole crew out of a ship.

To enquire into these cases, and into cases in which the seaman is the chief evil doer, and to arbitrate fairly between master and seamen, is a difficult, troublesome, and disagreeable duty; to take the master's word that the men have deserted, or the seaman's word against the master, is a very easy task; but to inquire is distinctly the duty of a Consul, and we wish there were more that performed it, in all cases even at the risk of being called Seamen's Consuls, and becoming unpopular with the worse class of masters.

CORRESPONDENCE.

MARINE BOARD EXAMINATIONS.

To the Editor of the Nautical Magazine.

Latitude $51\frac{1}{2}^{\circ}$ N., Long. 0° O'.

SIR,—A small work has recently appeared from the pen of Mr. J. Gordon, A.M., &c., &c., from the title page of which the reader may be led to imagine that it is "issued by the Board of Trade in two parts." It is entitled, "Catechism for the Marine Board Examinations"—Part I. being the work to which I am about to refer. But from the advertisement on the cover, we are informed that Part II. is "in the press, and shortly will be published."

Can you kindly inform me, Sir, for the benefit of navigators in general, whether the work in question is published by the authority and with the sanction of the Board of Trade, as from the information obtained from the title page of Part I., it is somewhat ambiguous.

Mr. Gordon is well known as a mathematician; but, oh! Sir, these mathematicians will be the death of us practical seamen. Some of my young shipmates have been studying those definitions on List A, No. 517, which became part of second mate's examination, on 1st March of the present year. Well, there is nothing very formidable in them, and our junior officers very soon obtain a knowledge of their meaning, because they are terms which are in constant daily use, but the difficulties only appear when gentlemen like Mr. Gordon tell us (see page 6 of the Catechism) that the "visible," the "sensible," and the "rational horizons" are all parallel, and again on page 7, that the "dip or depres-

sion of the horizon is the angle between the sensible and the visible horizons."

Mr. Gordon in his work recommends that the term amplitude should be abolished, and horizontal azimuth be used in its place. There are also a variety of new terms given to the courses, such as var^d or variegated course, and dev^d or deviated course, of which no sailor ever heard, although I have seen illustrated courses, crooked courses, and wide o' the mark courses. There are many other changes recommended by Mr. Gordon, also others which, he states in his work, are likely to be made in the problems at the Marine Board examination.

Will you kindly state, Mr. Editor, in your valuable work, whether Mr. Gordon has the authority or sanction of the Board of Trade for the statements published in his recent work. By so doing, you will confer a benefit on many of our young officers, no less than on

AN OLD SALT, AN OFFICER R.N.R.

[We have made inquiries at the Board of Trade, as requested by our correspondent, and learn that Mr. Gordon's book is in no way published under authority.—Ed.]

ON A PARTICULAR APPLICATION OF SUMNER'S METHOD FOR ASCERTAINING THE POSITION OF A SHIP.

The subjoined letter and paper have been forwarded to us by J. R. Hind, Esq., F.R.S., the superintendent of the Nautical Almanac Office:—

R.M.S. *Arno*, St. Thomas, May 14, 1872.

SIR,—I venture to send you the following method of finding a ship's position at sea, which I have often found of great service after running, in thick weather, without observations, for some days. It often happens that though during the day the weather is thick and foggy, yet the stars, or a few of them, will show out at intervals during the night; then, although it may be possible to get an altitude for longitude, it is not possible to obtain the latitude, and therefore the observation for longitude is practically worthless. By this method, the latitude and longitude are at once determined.

Let an altitude of a star east of the meridian, and an altitude of a star west of the meridian, be taken at the same time, or within a minute or two of each other, and the time of chronometer noted at each observation; then work two positions for longitude by each star, with two approximate latitudes, say a degree apart; this will give two lines, of equal altitudes, and as the ship must be somewhere on each of those lines, wherever they intersect each other is the ship's position.

This is, you will perceive, merely an adaptation of Captain Sumner's method of finding a ship's position at sea, but I have never seen *this*

method mentioned in any work on navigation, nor have I ever met any one who had ever used it. I thought of it, and tested its accuracy in fine weather, and when close to the land, some years ago, and have always used it since with the greatest confidence.

It must be borne in mind that stars, &c., whose declination is to the south of the observer's latitude, give lines of equal altitudes, running N.E. and S.W., when they are to the eastward, and N.W. and S.E., when they are to the westward of the meridian, and of course stars to the northward of observer, give just the reverse lines of equal altitudes—viz., N.W. and S.E., when to eastward, and N.E. and S.W., when to westward of meridian.

The further the stars are to the northward, or southward, of the observer, the greater the angles, and, therefore, these stars are the best suited for observations.

I enclose two positions found at sea by this method; the first was taken when both latitude and longitude were very uncertain, and the second merely as a test example, when the ship was close to the land, and her position perfectly known.

You can make any use you like of this letter, if you think that this method will be of any service to navigators.—I am, Sir, your obedient servant,

STEPHEN DIX,

Commander R.M.S. *Arno*.

Example 1.—Jan. 12, 1871. Ship's position uncertain. Latitude supposed to be somewhere between 47° N., and 48° N. The following observations were taken at 6 a.m.:—Capella (west of meridian) G. M. T., 7h. 5m. 4sec., altitude $14^{\circ} 50'$ (true); Vega (east of meridian), G. M. T., 7h. 6m. 52sec., altitude $36^{\circ} 26'$ (true); lat. 47° , long. by Capella, $16^{\circ} 19' 30''$ W., lat. 48° , long. $14^{\circ} 17'$ W.; lat. 47° , long. by Vega, $15^{\circ} 1' 15''$ W., lat. 48° , long. $15^{\circ} 38' 30''$ W. Lay off the first two positions by Capella on a chart, and draw a line between them. Lay off the two positions by Vega on a chart, and draw a line between them; where the two lines intersect is the ship's position—viz., lat. $47^{\circ} 31' 15''$ N., long. $15^{\circ} 18' 15''$ W.

Example 2.—May 6, 1872. Ship running along Porto Rico; position known accurately. The following observations were taken at 8.40 p.m.:—Arcturus (east of meridian), G. M. T., 19h. 2m. 51sec., altitude $59^{\circ} 27'$ (true); Jupiter (west of meridian), G. M. T., 13h. 4m. 35sec., altitude $35^{\circ} 14'$ (true); lat. 17° N., long. by Arcturus, $66^{\circ} 55' 15''$ W., lat. 18° N., long. $67^{\circ} 6' 15''$ W., lat. 17° N., long. by Jupiter, $67^{\circ} 19' 15''$ W., lat. 18° N., long. $67^{\circ} 8' 45''$ W. Laying off these positions on the chart, and drawing the two lines of equal altitudes, the point of intersection gives

lat. $17^{\circ} 54'$ N., long. $67^{\circ} 5' 30''$ W., the exact position of the ship by bearings of the land.

STEPHEN DIX.

[We have inserted the above application of Sumner's method, as many of our readers interested in the subject may not have seen it, but it is not new, and Captain Dix has unnecessarily restricted its use to two *stars*, and to the observations being taken within a minute or two of each other: the moon and the sun, provided they differ in azimuth more than 20 or 30 degrees, are more eligible objects, on account of the superior horizon obtained during daylight, and if the second observation cannot be taken immediately after the first, the correction for run can, with great ease, be applied to the first altitude.—Ed.]

FREEBOARD OF SHIPS.

THE question often arises as to what is the limit to which a vessel should be loaded. There is no properly recognised rule for determining it, and yet such a rule would be of great service to shipowners and ship-charterers.

The limit of loading is expressed by the freeboard, and the freeboard should be proportionate to the vessel's beam, because the gunwale will, when a ship is listing or rolling, reach the water sooner, that is, with less heel, in a broad ship than in a narrow one. But the reserve of buoyancy, as against leakage, &c., should clearly be in proportion to the depth; therefore the freeboard should be proportionate to the depth as well as to the beam.

A fine vessel will lift more easily than a full one; she will at the same time plunge more. It seems to me, therefore, that a ship's fineness or fullness, save inasmuch as these are displayed by the midship section, might be disregarded in the matter of freeboard, and that the *midship girth*, as combining in a convenient form the claims of the three elements, beam, depth, and relative fullness, could be made the basis of a rule.

Length also must be taken into account, for in two vessels of similar depth and beam, but whose respective lengths are as two to one, there is in the longer, as compared with the shorter one, approximately twice the weight pitching and contending against twice the resistance to these motions; so that height out of water should be increased in a much higher ratio than that of length simply. Indeed, when we recollect that the long ship and the short ship, when placed among waves that are proportionate to their respective lengths, will contend against disturbing forces that increase more or less as their lengths, it will be evident that this length-allowance must be very considerable, probably (unless vessels become much longer than the longest possible natural wave) *as the cube*

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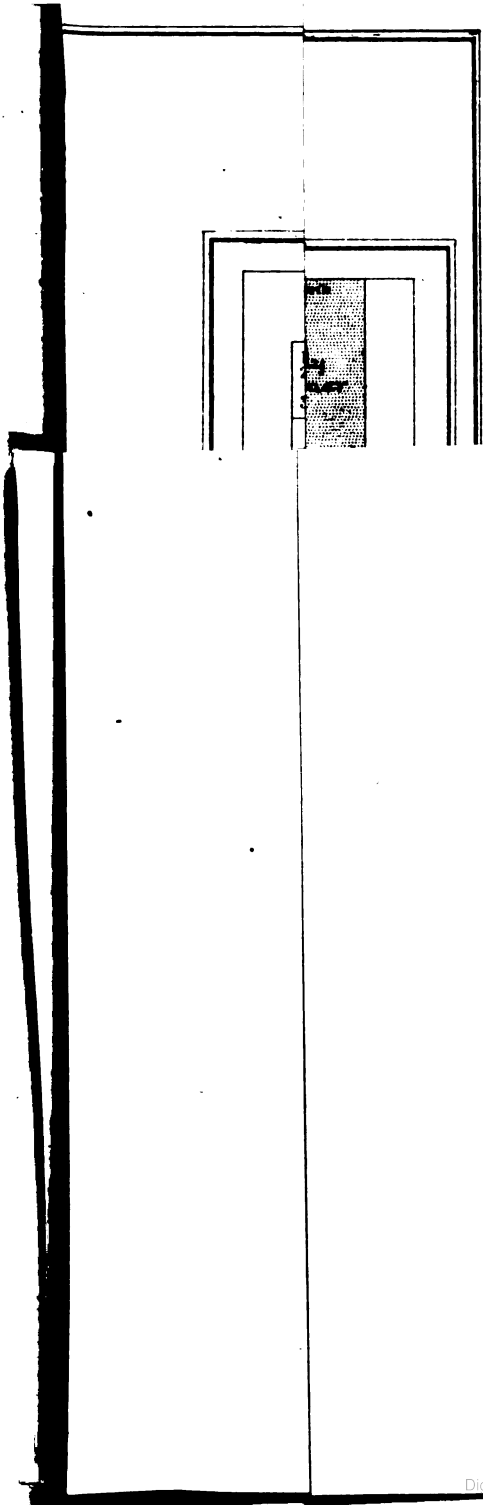
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of the length, and practice, though so irregular, points to some such conclusion.

Supposing that these propositions can bear examination, what share should the proposed factors have in the required rule? The following combination seems to answer reasonably well, that is, that the minimum "dry side," or freeboard in full powered steam vessels, should be a quarter of an inch per foot of midship girth, with the addition of one inch for every 100 feet of length cubed, or in formula :

$$\left. \begin{array}{l} \text{minimum freeboard} \\ \text{in inches} \end{array} \right\} = \frac{\text{midship girth in feet}}{4} + \frac{(\text{length of vessel})^3}{1,000,000}$$

The provision for sailing ships to be the same as that for steamers of twice their beam.

The girth here is supposed to be taken from main deck, so that in so-called spar-decked or three-decked vessels, a further allowance would have to be made for additional height. This might be done by adding to the draught of water obtained as above, three-fourths of this additional height.

I append particulars of a few vessels for comparing the working of this combination :—

		Length.	Beam.	Depth of hold.	Freeboard in in. bes.	
					$\frac{\text{Mdsh. grth ft.}}{4}$	$\frac{\text{.ngth. in ft.}^3}{1,000,000}$
Steamer, fine		96	20	8 $\frac{1}{2}$		10
" full		234	32	18		28
" full		300	36	20		45
" full	spar-decked	300	36	27		66
" fine		420	40 $\frac{1}{2}$	23 $\frac{1}{2}$		95
" fine	spar-decked	420	40 $\frac{1}{2}$	31		115
Sailing Vessel, fine		115 $\frac{1}{2}$	22	11 $\frac{1}{2}$		18
" fine		150	26 $\frac{1}{2}$	17 $\frac{1}{2}$		47
" full		207	34 $\frac{1}{2}$	23 $\frac{1}{2}$		65
" fine		270	37	25		88

O. B.

Stockton-on-Tees, 4th May, 1872.

THE "ARIADNE'S" BOATS.

To the Editor of the Nautical Magazine.

SIR,—In your number for the present month I see a letter on the above subject, from Captain Blake, in which he suggests a mode of trimming boats, by moving the men from bow to stern, or *vice versa*. I quite agree with the plan having frequently used it; but should like the public to know that it is almost the first thing taught in the Navy to such

officers as may at any time be likely to be put in charge of a boat. I have also found in a heavy sea that by fixing the stern awning stanchion, one, or even two, steer oars may be easily attached to it, and the boat will then be under perfect command.

D. M. SMITH, Lieut. R.N.

Paddockhurst, near Crawley, Sussex, June 11, 1872.

BOAT LOWERING APPARATUS.

To the Editor of the Nautical Magazine.

Aberdeen, May 27th, 1872.

DEAR SIR,—I have been asked to write to you for some time on the subject of lowering boats.

With the best patent, if a ship is not well handled, and the patent is expected to do all, you will come to grief. To lower in a rolling sea in the trough, would be nearly sure of a capsizing; it is better to wait and bring the ship's head up to the sea, even on the chance of losing one to the *many*, and thus I pronounce that the blind use of a patent, with inexperience, is highly dangerous.

Now, as to the general mode of fitting the slings and the tackle, there is one thing I wish to bring before you.

I may say ninety-nine times out of one hundred, it is wrongly fitted. Up to the time I left the Navy, in 1865, even in the Queen's yards, you received your boats imperfect, and you had to alter them with your own resources. And I think you may say that throughout the Mercantile Marine, the correct mode is *the exception, and not the rule*.

"*The hook should be in the slings, and the thimble in the block,*" and it is nearly always *vice versa*.

I am sure you will accept my remarks as they are tendered, not as an intrusion, but as a subject for thought and consideration.—Believe me to remain, most sincerely,

VINDEX.

THE CANADIAN CAPITATION DUTY.—The Government have imposed a duty of \$2 for each passenger or immigrant above the age of one year arriving in any vessel not cleared under the sanction of the Imperial Commissioners of Emigration not carrying a surgeon, and on board of which proper measures for the preservation of the health of the passengers and crew have not been observed during the voyage.

THE WEATHER IN THE BRITISH ISLANDS DURING THE
MONTH OF APRIL, 1872.

THE month opened with easterly winds and rather cold weather in the northern parts of the kingdom, but westerly and warmer breezes in the southern. Between the 1st and 3rd a slight barometrical depression travelled from the south of Ireland across England to the north of Germany, gradually producing a northerly current of air over the whole country, with cold and showers in England, Ireland, and the north-east of France. On the 4th this wind increased to a fresh or strong breeze, accompanied by hail as well as rain; but was followed by two days of finer and warmer weather, in which light southerly breezes extended slowly over the western and northern districts. On the 7th the south-westerly wind prevailed, with cloudy weather, some rain, and a further rise of temperature. On the 9th, a depression having passed from the northward of our islands across the North Sea to Denmark, the wind again became northerly, with finer, but colder weather. From the 10th to the 15th the weather improved considerably, a light genial south-westerly current being general, with bright spring-like weather. On the 15th, however, clouds accumulated at the northern stations, with a fall of temperature. These gradually extended southwards, and on the 17th chilly damp northerly winds were felt over the whole kingdom. From the 18th to the 20th the wind became strong, with squalls of snow, hail, and rain, and on the latter day a shallow depression existed over the north of France. This disturbance moved slowly in a north-westerly direction. On the night of the 21st it had become much more marked, and produced strong north-easterly gales on our western coasts, with snow squalls; while, as it passed off, the south-westerly wind in its rear diffused itself over the country, and remained till the 27th. Another slight depression then formed over the Bay of Biscay, and the wind consequently shifted to the north-eastward, over the south of England and north of France, but was light. After several thunderstorms in various places, the weather improved slowly till the end of the month. In the nights of the 28th and 29th sharp ground frosts occurred in exposed places near London, but in the day-time the sun was warm.

With the exception of the bad weather on the 21st, the month was comparatively free from *extremes* of any kind. Temperature varied somewhat, as either the northerly or southerly wind became the prevailing current, but was never very high nor extremely low for the time of year. The gales were few; and, though locally heavy on the 21st, were generally moderate. Showers were frequent, but excessive falls of rain were not reported. The thunderstorm at Liverpool on the 25th was exceptionally heavy.

SOIETIES—MEETINGS, ETC.

ROYAL GEOGRAPHICAL SOCIETY, June 10. Major-General Sir Henry C. Rawlinson, K.C.B., President, in the chair.

PREVIOUS to the reading of the paper announced for the evening, the President made some remarks on the telegrams which had just been received *viâ* Bombay, regarding Dr. Livingstone.* He described them as more than usually enigmatical: one of them, however, sent by the Governor of Bombay to the Duke of Argyll, made the important announcement that Livingstone had been to the northern end of Lake Tanganyika, and found the rivers flowing into the Lake, which was believed to mean that Tanganyika was disconnected from the Nile drainage, and this was the interpretation given by Colonel Grant, who also made some remarks on the subject of the meeting. The President read a letter from the Sultan of Zanzibar to himself (translated by General Rigby,) which expressed the gratification of his Highness at the receipt of a letter from Earl Granville introducing the Livingstone Search Expedition, and his intention to aid the expedition in attaining its objects. The council had that day elected his Highness as an honorary member of the Society.

The paper read was "On the New Hebrides and Santa Cruz Islands in the South-West Pacific," by Lieut. A. H. Markham, R.N. The paper described the topography, volcanic phenomena, and ethnology of these groups of islands, visited by him during the cruise of H.M.S. *Rosario*, under his command, between October, 1871, and February, 1872. He gave a history of the progress of discovery in this part of the Pacific, commencing from the voyage of Mendana in 1568. All the various expeditions for three centuries did little more than sail through the groups and have deadly encounters with the natives. The islands lie in N.N.W. and S.S.E. direction, and contain some of the most continuously active volcanoes on the surface of the globe. The volcanic cones may be traced in a linear direction for 600 miles. The islands are remarkable for the absence of coral reefs around them, which is attributed by Dana to the destruction of the zoophytes by the heat produced by submarine eruptions. Lieut. Markham ascended the volcano Gasowa, in the island of Tanna, and watched an eruption from the edge of the crater. During the intervals between the eruptions (sounding like broadsides from a line-of-battle ship) the sheets of liquid fire seemed to flow back to three distinct openings in the bottom of the funnel-shaped crater; masses of scorix were hurled up vertically to a height of 1,000 feet. The Melanesian (black, curly-haired) and Polynesian (straight-haired) races appeared to be

* We are pleased to be able to congratulate our readers and ourselves on the more recent satisfactory intelligence concerning the brave old Doctor.—Ed.

curiously dovetailed in their distribution throughout the northern portion of these archipelagos. This was explained, in the discussion which followed, by the Bishop of Lichfield, who gave to the meeting a most interesting account of his own experiences in these islands, and who showed that the wandering Polynesians, who peopled the greater portion of the Pacific area (including New Zealand), had been driven in their canoes by winds on some of the smaller islands of the group.

BOOKS RECEIVED.

The Principles and Practice of Canal and River Engineering. By David Stevenson, F.R.S.E., M.I.C.E., &c., &c. Second Edition. Edinburgh: Adam and Charles Black. 1872.

THIS work, in its present comely aspect, would hardly be recognised as a second edition of its modest-looking predecessor of fourteen years ago. Nor is it the exterior only that has undergone change; the contents also have been recast, enlarged, and, both in matter and form, improved.

As in the title, so in treatment, Canal Engineering comes first under notice; and its modern examples—the great works at Amsterdam and the Isthmus of Suez—are briefly, but sufficiently, described, and represented by well-executed plates. But by far the greater and more interesting portion of the author's work is occupied with considerations, theoretical and practical, relating to River Engineering; and it is in this portion that the new matter is most prominent.

Mr. Stevenson considers every river affected by tidal influence as divisible into three "compartments:" the lowest, or "*sea proper*," characterised by the presence of "*unimpaired tidal phenomena*;" the intermediate, or "*tidal compartment*," where the inclination of the river's bed produces a "*modified flow of the tide*;" while in the highest, or "*river proper*," there is an "*absence of all tidal influence*."

This theory is illustrated by an account of investigations made in 1842, into the tidal phenomena of the Frith of Dornoch, in Cromartyshire. Our author, however, warns us against the supposition that the above-mentioned boundaries can be traced with precision under all circumstances and in all cases. All he maintains is, that the said "compartments" do, more or less definitely, "exist in all rivers debouching through firths and estuaries on a coast where the sea has a notable range of tide." But, in the case of seas almost tideless, or rivers with a short and steep descent, such a division is not practicable.

As the physical characteristics of each of these compartments differ *inter se*, so also do the engineering works adapted for their improve-

ment; and, with the proper consideration and illustration of these, in turn, the rest of the work is mainly occupied.

Since, however, before seeking to improve the navigable qualities of any river, we must of necessity study its ordinary behaviour, a considerable, and by no means the least interesting, portion of these pages is devoted to description of methods of ascertaining the various physical characteristics of rivers, their tides, normal discharge, velocity, and direction of under-currents, if such exist; and under this head an entirely new chapter (on "Hydrometric Observations") has been introduced.

Chap. XI., devoted to "Works for Accommodation of Vessels," strikes us as being somewhat scanty; but its subject trenches closely on one which has been already treated in a work on "Harbours" by Mr. T. Stevenson.

The subject of "Bars," with the various theories that have been, at different times, and by various authors, put forth to account for them, is discussed at some length, and Mr. Stevenson certainly seems to us to carry conviction with him in maintaining that the bar is a product of the sea, and not of the river. An inconsistency, however, in his definition of the term attracted our notice, in reading the first edition of this work some years ago; and, on reference to the subject in the edition before us, we find that inconsistency still remaining. At p. 265 (second edition) we read, "What is termed '*the bar*,' therefore, is not the sandbank that dries at low water, but those *constantly submerged banks* which have a channel, subject to variations in position and depth, passing through them." At p. 268, "In this way the waves of the sea, on the one hand, and the currents on the other, produce the well-known feature of a tide-covered beach, extending from the shores of our inlets, with submerged sand-banks, having a *channel through them termed the 'bar.'*" We venture to suggest that it would be more intelligible and, at the same time, more exact, were the term restricted to the former its primary sense.

We feel, too, somewhat inclined to complain of the almost disproportionate amount of space devoted by Mr. Stevenson to the consideration of the rivers of his own country. However, we may, perhaps, without ascribing this partiality to patriotism, seek a more reasonable, and more just, cause for it in the fact that the natural configuration of Scotland, rugged as is its surface and deeply indented by many and sinuous firths, doubtless gives to its rivers points of peculiarity and interest not afforded by streams whose courses, if longer, are, at the same time, more uniform and more tame.

It is impossible, in a brief notice such as this must of necessity be, to touch upon all the subjects treated of in this volume, but we feel assured

that his work will, to quote the words of his preface, "prove useful, if not to the engineer in his practice, at least to the pupil in the study of his profession."

Our Iron Clad Fleet. A Letter to the Right Hon. G. J. Goschen, M.P.,
First Lord of the Admiralty, 1872.

THE writer of this letter, Rear-Admiral Fishbourne, has been often and unsparingly attacked as to his views on questions of naval architecture. In his present letter he defends his own opinions, and attacks, with considerable energy, Messrs. Reed and Froude, against whose school of naval science the gallant admiral appears to have a very decided antipathy. As a professional sailor, Admiral Fishbourne's views are entitled to some consideration, and when he makes the somewhat alarming statement, that many others of our ironclads are in as perilous a condition, as regards safety, as was H.M.S. *Megara*, though from a different cause—viz., deficiency in stability—we are certainly rather taken aback. This assertion he undertakes to substantiate in his pamphlet, and we must acknowledge that his clearness, vigour, and sincerity, in some cases, carry us with him. We have not space to follow him in his arguments, many of which we consider to be unsound; but we do think that in such a matter there should be no doubt as to the seaworthiness of our ironclads, and that if Mr. Goschen is not completely and undoubtedly satisfied that all our vessels of war are seaworthy, his imperative duty is to assure himself of the true state of things, by the best means in his power; whether by Royal Commission, or otherwise, is a question for him to determine.

Our National Defences. By Vice-Admiral Sir William H. Hall, K.C.B.,
F.R.S. London, 1871.

IN connection with the invasion question, lately brought up at the United Service Institution, we feel bound to notice Admiral Hall's pamphlet, published last year, because he specially draws attention to our liability to invasion, in the event of the ships of the Royal Navy being not available for coast defence. With a view to provide for such a contingency, he renews a suggestion made twenty-five years ago, to arm our mail steamers and steam tugs. Mr. John Laird, M.P., it appears, took up the idea, with the view of applying it to the Mersey, and his proposal to the Admiralty was at first favourably received, but, eventually, was allowed to fall through, on account of expense. Sir William Hall also advocates the establishment of a large fleet of gunboats, to be manned by fishermen; the extension of our reserve forces, and the establishment of harbours of refuge at various points round our

coasts. The gallant admiral is evidently prompted by a patriotic spirit in his proposals and suggestions, and if he makes no great way with his particular propositions, he certainly will enlist the sympathy of all who read his pamphlet, for the sincerity of his motives. Moreover, he is a sailor of no ordinary experience, and is entitled to be heard on a subject so immediately concerning his own profession, and so important to us all.

WE have received from the Astronomer Royal his Report to the Board of Visitors of the Royal Observatory, Greenwich, read at the Annual Visitation on the 1st June last. Every scientific sailor well knows how much navigation owes to the Royal Observatory; its satisfactory progress and further development are undoubtedly matters of the greatest importance to nautical science. It is, therefore, with real pleasure that we welcome the annual report of the Astronomer Royal on the details of what has been done in the last year, the condition of his observing and recording instruments, and the possible and probable future results of his labours. There is nothing to comment upon in the work accomplished during the past year, nor the condition of the apparatus now in use at Greenwich, but we are glad to see that it is suggested that observations of more general interest should be carried out as often as opportunities offer, and that the search for evidence bearing upon astronomical discoveries of popular interest should be added to the somewhat confined sphere of the Observatory duties. The report in itself is eminently satisfactory, and bears abundant testimony to the merits of the Astronomer Royal to the honour lately conferred upon him, of which it may be said that it is better late than never.

CHAIN CABLE ACTS.—In the following countries no laws exist for the testing of chain cables and anchors for use in the Merchant Service,—viz., United States, Egypt, Holland, Morocco, Greece, France, Portugal, Austria, Hungary and Denmark; it therefore follows that if the Testing Acts are not to apply to the export trade of this country, chain cables and anchors made in this country, and unfit for use on board our ships, may be exported to those countries and placed on board their ships. The proposal of Sir Wm. Hutt is much like the proposal that a certain worthy citizen might be allowed to sell wooden nutmegs abroad, so long as he sold real ones at home.

MONTHLY ABSTRACT OF NAUTICAL NOTICES.

No.	PLACE.	SUBJECT.
111	ADRIATIC—Ancona	Alteration in Lights.
112	ADRIATIC—Pola	Establishment of a Time Ball.
113	NEW ZEALAND—Middle Island East Coast— Waikouaiti Bay	Discovery of a Sunken Rock near.
114	NORTH SEA—Netherlands—Hook of Holland	Canal through.
115	NORTH SEA—Belgium—Scheide River—Blanken- berghe	Alteration in position of Light.
116	NORTH SEA—Belgium—Scheide River—Knoeke	Establishment of a Light.
117	NORTH SEA—Belgium—Scheide River—Heljet	Discontinuance of Light.
118	CHINA—East Coast—Tungao	Discovery of a Sunken Rock near.
119	FRANCE—West Coast—Port Cap Breton	Establishment of a Light.
120	BALTIC—Femern Belt—Femern Sound Lights	Exhibition of the Light.
121	BRAZIL—Paranagua Bay—Conzas Point	Establishment of a Light.
122	CUBA—Port Sagua la Grande—Hicacal Cay	Establishment of a Light.
123	KATTEGAT—Løseoe	Establishment of a Harbour Light.

NAUTICAL NOTICES.

111.—ADRIATIC.—*Ancona*.—The following alterations have been made in the lights, viz.:—The green light at the extremity of the northern mole has been replaced by a *red* light. The white light at the extremity of the southern mole has been replaced by a *green* light. The red light on the battery of the northern mole (which is only exhibited when it is not possible to light the one at the extremity of the mole) has been changed to a *white* light.

112.—ADRIATIC.—*Pola*.—Mean time at noon for the meridian of the Observatory at Pola will be signalled daily from the S.W. bastion of the Harbour Castle, by the dropping of a time-ball at the instant of mean noon. If one or more vessels should desire to know the mean noon time of Greenwich ($0^h 56^m 23.5^s$ after mean noon of Pola), it should be communicated in time to the hydrographic department, and it will then be signalled in the same manner as the mean noon time of Pola. If the ball does not drop at the correct time it will be again hoisted half way up five minutes after, and after an interval of 15 minutes slowly lowered. Should anything occur to prevent the use of the apparatus, the time of mean noon will be signalled from the hydrographic department as

formerly, by lowering a blue flag at the exact time. The longitude of the Observatory at Pola in time is $0^{\text{h}} 56^{\text{m}} 23.5^{\text{s}}$ east of Greenwich.

113.—NEW ZEALAND.—*Middle Island*.—*East Coast*.—*Waikouaiti Bay*.—Information has been received of the existence of a sunken rock near Waikouaiti bay, northward of Otago harbour, on the east coast of the Middle island, on which the steamship *Ahuriri* lately struck. The rock, *Ahuriri rock*, lies about three-quarters of a mile from the shore, and has 5 feet water on it at low water, with from 2 to 4 fathoms immediately around. From the rock Remarkable cliff, near Tairoa head, bears S. by E. $\frac{3}{4}$ E., Vulcan point N. by E., and Harris bluff S.S.W. $\frac{1}{4}$ W. These bearings place the rock in lat. $45^{\circ} 86' 50''$ S., long. $170^{\circ} 45' 40''$ E., and two miles northward from Jones head, Waikouaiti bay. Vessels are cautioned not to make free with this part of the coast, which has not been examined near the shore, and is considered foul.

114.—NORTH SEA.—*Netherlands*.—*Hook of Holland*.—The canal from Maas Sluice, through the Hook of Holland, is so far completed that vessels drawing 11 feet of water can pass through (vessels drawing 18 feet have passed through to sea). Also, that the following buoys have been placed to mark the deepest water to the new passage :—A Fairway buoy, a conical white buoy with red flag, about 3 miles N.W. by W. from the seaward entrance of the Canal, in lat. $51^{\circ} 59' 50''$ N., long. $4^{\circ} 0' 50''$ E. Three black buoys off the entrance of the Canal on the port side going in, and three white buoys on the starboard hand, the outer white buoy having a red flag surmounting it, and the outer black buoy a basket.

115.—NORTH SEA.—*Belgium*.—*Schelde River*.—*Blankenberghe*.—A new light is now exhibited from a lighthouse recently erected W. $\frac{1}{2}$ S., half a mile from the fort on which the present Blankenberghe light is exhibited. The light is a *fixed white* light of the 3rd order, 83 feet above high water, and should be seen 12 miles. The tower surmounts the keeper's dwelling. Position, lat. $51^{\circ} 18' 45''$ N., long. $3^{\circ} 7' E$. The light at the fort has been discontinued.

116.—NORTH SEA.—*Belgium*.—*Schelde River*.—*Knocke*.—A *fixed white* light, of 3rd order, is now exhibited from a lighthouse erected on the Hawes to the northward of Knocke village. The light is 87 feet above high water, and should be seen 12 miles. The tower surmounts the keepers dwelling. Position, lat. $51^{\circ} 21' 15''$ N., long. $3^{\circ} 17' 30'' E$.

117.—NORTH SEA.—*Belgium*.—*Schelde River*.—*Heijst*.—The light at this place has been discontinued.

118.—CHINA.—*East Coast*.—*Tungao*.—Information has been received of the existence of a sunken rock near Tungao bay and lying directly in the track of vessels proceeding from the anchorage in Tungao roads round Breaker point, as also when keeping in shore to avoid the north-east monsoon, and on which the steamship *Hai-Loong* struck.

The sunken danger, *Hai-Loong Rock*, lies a mile off shore, on rocky ground, which is about half a mile in extent, with from 5 to 10 fathoms; near the centre of this rocky ground are two pinnacles, lying north and south 50 yards apart, with only 11 feet water on them, at low water, the lead slipping off into 6 fathoms on either side of each pinnacle. From the north pinnacle—The islet inside Breaker Point bears E. by N. northerly, distant $5\frac{1}{2}$ miles. White Rock, N. by E. $\frac{2}{3}$ E., one mile. North Pagoda, N.N.W. $\frac{1}{4}$ W., $5\frac{1}{2}$ miles. These bearings place the rock in lat. $22^{\circ} 54' 30''$ N., long. $116^{\circ} 19' 30''$ E.

119.—FRANCE.—*West Coast.*—*Port Cap Breton.*—A fixed red light is exhibited 26 feet above the sea, and visible 5 miles, from a lamp-post erected on the wall of the left bank of the entrance of the port, and 95 yards from the extremity. Position, lat. $49^{\circ} 39' 20''$ N., long. $1^{\circ} 27'$ W.

120.—BAL TIC.—*Femeru Belt.*—*Femeru Sound Lights.*—These leading lights through Femeru Sound will be exhibited from the 15th July, 1872.

121.—BRAZIL.—*Paranaqua Bay.*—*Conzas Point.*—A fixed white light, 262 feet above the sea, and visible 20 miles, is now exhibited on this point, in the south channel. The tower, 69 feet high, is in lat. $25^{\circ} 32' 40''$ S., long. $48^{\circ} 18' 20''$ W.

122.—CUBA.—*Port Sagua la Grande.*—*Hicacal Cay.*—A fixed white light, 55 feet above the sea, and visible 8 miles, is exhibited from a mast rising from the centre of the keeper's dwelling, on the north-west point, of Hicacal Cay, east side of the entrance of Boca de Sagua la Grande.

Note.—The light marks the entrance of the Boca de Sagua la Grande, and will be useful to vessels bound for Boca de Maravillas, also for small vessels entering the port, or seeking shelter in stress of weather.

123.—KATTEGAT.—*Lasoe.*—A fixed red light, 15 feet above the sea, has been established on the southern mole of the harbour, recently constructed on the north-west coast. The light will not be exhibited between the 5th May and 8th August, in each year.

Marine Board Offices, Port Adelaide, South Australia,
April 19th, 1872.

SIR,—I am directed by the President and Wardens to forward you the accompanying notice to mariners relative to the determination of longitude of Adelaide, and to request you will give every publicity thereto.—I have, &c.,

G. E. DE MOLE, Secretary.

DETERMINATION OF LONGITUDE OF ADELAIDE.—Masters of vessels and others are hereby informed that the hydrographer to the Admiralty has caused the whole of the positions, as determined by the coast survey of this Province, to be shifted one mile and three-quarters ($1\frac{3}{4}$) to the westward, thus placing Snapper Point, Port Adelaide, in longitude $138^{\circ} 31'$ E.,

X X

instead of $138^{\circ} 32' 42''$ E. All Admiralty Charts of the Province hitherto disseminated, will be affected thereby.—R. H. FERGUSON, President of the Marine Board of South Australia.—Marine Board Offices, Port Adelaide, South Australia, 12th April, 1872.

RIVOLI BAY TO AUSTRALIA.

The Hydrographic Department of the Admiralty have published a notice containing a description of, and sailing directions for, Rivoli bay, by Navigating Lieutenant Frederick Howard, R.N., in charge of the Coast Survey of South Australia, 1872. It affects the Admiralty charts Nos. 1062, 1015, and 1007; also the Australia Directory, Vol I. page 185.

PRESSURE on our space compels us to postpone, until next month, the publication of the Hydrographic intelligence, issued from the Admiralty, relating to the West Indian and South American coasts.

CHARTS, ETC., PUBLISHED BY THE HYDROGRAPHIC OFFICE, ADMIRALTY, Sold by J. D. POTTER, 31, Poultry, E.C.

No.	Scale.		s.	d.
982	various	Pacific, anchorages in the Caroline islands ...	1	6
981	m = 0·7	Pacific, Seniavina islands, Caroline islands ...	2	0
1484	m = 0·9	Adriatic, Trieste bay	1	6
1006	various	Australia, south coast, Lacipede and Guichen bays	1	6
1007	m = 2·0	Australia, south coast, Rivoli bay, and Port Macdonnell	1	6

OUR OFFICIAL LOG.

SHIPPING AND MERCANTILE GAZETTE CORRESPONDENCE.

(Reprinted by special arrangement with Sir WILLIAM MITCHELL.)

CARGO OF PITWOOD.—In the absence of any stated quantity in a Bill of Lading, what quantity of pitwood per day can a vessel claim for discharging?—In the absence of any stipulated agreement as to the discharge of a cargo, the delivery would be ruled by the custom of the port; but it is implied thereby that the vessel should be released to her owner with reasonable dispatch. Not less than 30 tons per working day of pit props should be delivered daily, unless quicker discharge is customary. Reckon 30 tons per diem, and give notice of Demurrage for all days' detention beyond.

BANKRUPT CHARTERER.—A vessel chartered to load at a port before arrival. Two days after she arrives, the master is informed that the

charterers, who accepted the vessel through their agent (both living at port of loading), have become bankrupt. Does that fact cancel the charter-party; if so, who is responsible for damages?—If the assignees of the bankrupt charterer, in whom the insolvent estate is or may be vested, elect to load the ship and fulfil the contract, the charter would not be annulled. Notice of the vessel's arrival should be given to the charterers, and, if an assignee is appointed, to the latter also. If, however, the ship is not laden within a reasonable time—say 14 days from the time of reporting the vessel ready to take in—the master would be at liberty (unless previously absolved by consent, which he should endeavour to obtain without prejudice) to re-charter his ship. The amount of damages would be the estimated amount of freight under charter-party; and if there should be any loss in this respect, arising from the acceptance of a lower rate, the difference could be claimed under the bankrupt's estate.

CHIEF MATE'S CERTIFICATE.—A. holds a certificate of competency as chief mate, granted at Calcutta by the Lieutenant-Governor of Bengal. Is it necessary to pass again before A. can ship out of Great Britain?—The certificate granted by the Lieutenant-Governor of Bengal would not enable A. to command a vessel registered in India, and proceeding from a port in the United Kingdom, unless she is bound straight home from the United Kingdom to her own possession.

DEATH OF A SHIPMASTER AT SEA.—A master of a ship dies at sea on the passage home, and the chief officer takes charge of the ship, and brings her home safe to the owner's satisfaction. He also touches at a port on the passage for necessaries, and is obliged to get his name put on the register before they would allow the ship to proceed. Can he claim master's wages from the captain's death, or from the time his name is put on the register? Or, can he claim anything for compensation more than what he signed articles for before he left England?—In the case of the *Porcupine*, it was held by the Court of Admiralty that a seaman who claimed wages, first as mariner, afterwards as second mate, and then as chief mate, taken on board as supernumerary, and without any fixed rate of wages, was entitled to the progressive rating. An apprentice, also, having been promoted to be mate, was held entitled to such extra wages as Mate, the owners having derived the benefit of his extra services ("Bisset v. the Owners of the *Eliza*," in *Shipping and Mercantile Gazette*, October, 1856). A mate appointed abroad to a ship, on the death of the master, was held to be entitled, under a contract with agent, to higher wages than former master ("Murdock v. Wilkinson," *Shipping and Mercantile Gazette*, 12th May, 1848). Hence the late chief officer would be entitled to master's wages from the time he assumed command.

ENGINEERS' TIME.—The engineers of an English steamer at a foreign

port, after having received their higher wages as asked for, began to work on board the ship after the nine hours movement, commencing work at 7 A.M. and leaving the same at 4 P.M. Is this lawful?—Unless the master of the ship, on signing articles of agreement, stipulates for hours of labour, the engineers would have to do duty like the rest of the crew as regards time; and if they refuse to obey commands, the non-compliance should be entered and duly attested in the official log, as required by the Statute.

GERMAN SHIPPING LAW.—Does the fact of a German vessel having been sold to Norwegian owners prevent her from being liable to seizure in Germany, by the owner of a British ship with which she had been in collision, and to which she had done serious damage; the said collision having occurred about three weeks previous to the time when she was so sold? If so, to whom must the English shipowner look for a satisfaction of his claim? When the collision occurred the German vessel was bound to a port in Germany, where she arrived, and was sold to Norwegian owners before the English shipowner had time to arrest her.—Under Art. 736 of the German Code it is enacted that shipowners shall be answerable for damages to ship and cargo in cases of collision. If (Art. 740) a ship is in charge of a pilot in compulsory pilotage waters, and no blame rests on the master or crew, the shipowner is not responsible for damages occasioned by collision, even though his ship be in fault. Art. 455 enacts that an owner may be sued before the Court of the Port of Registry, irrespective of questions as to whether he is personally liable, or only to the extent of ship and freight. If, therefore, the German ship, which we presume is alleged to be the wrong-doer, in the collision referred to has been sold in a German port to a Norwegian, the original owner may be sued, and it will rest with the court to determine the question of bail, or the arrestment of the proceeds of the sale of the ship.

BOARD OF TRADE INQUIRIES AT HOME.

84. *Tripoli*, of Glasgow, stranded on South Tuskar Rock, 17th May. Inquiry ordered 27th May, and held at Liverpool on the 6th and 7th June, before T. S. Raffles, Esq., S.M., with Captains Harris and Hight as N.A. Master in default for keeping too close to a well-known danger. Certificate suspended for six months.

85. *Halcyon*, of Cork, stranded on the Chickens Rock, Tuskar, 24th May, 1872. Inquiry ordered 27th May, and held at Liverpool on the 11th and 12th June, before T. S. Raffles, Esq., S.M., with Captains Harris and Hight as N.A. Master in default. Certificate suspended for six months.

86. *Lixie Furn*, of Hull, stranded on the Goodwin Sands, 14th May. Inquiry ordered 30th May, but subsequently abandoned.

37. *Sarah M.*, of Hull, abandoned in lat. 44° 15' N., lon. 50° W., on the 29th April. Inquiry ordered on the 31st May, and held at Hull on the 14th and 15th June, before T. H. Travis, Esq., S.M., with Captains Harris and White as N.A. Master justified in abandoning his vessel.

INQUIRIES ABROAD.

31. *British Admiral*, of Liverpool, dismasted and abandoned on the 14th January in lat 20° N., lon. 135° E. Inquiry held at Hong Kong, before C. May, Esq., J.P., E. Arthur, Esq., J.P., R. H. Cairns, Esq., Harbour Master, and W. M. Gillson and T. Oates, masters, Mercantile Marine. Vessel justifiably abandoned.

32. *Fountain*, of James Town, St. Helena, stranded near Sundays River, 20th March, 1872. Inquiry held at Port Elizabeth, before A. Wyld, Esq., Resident Magistrate, and F. Skead, R.N. Master in default. Certificate suspended for twelve months.

33. *Adelaide Baker*, stranded on Memory Rock, Bahamas, 8th April. Inquiry held at Nassau, before the Hon. E. Barnett, J.P., A. Taylor, Esq., J.P., and H. C. Lightbourne, Port Officer. Casualty due to faultiness of chronometer.

34. *Twilight*, stranded on Bunbury Bar, 10th March. Inquiry held at Bunbury, Western Australia, before W. P. Clifton, Esq., Collector of Customs, and G. De Courcy Lefroy, Esq., J.P. No blame attached to master, vessel was driven from her anchors by stress of weather.

35. *Wild Wave*, stranded on Bunbury Bar, 10th March. Inquiry held at Bunbury, Western Australia. No blame attached to master.

36. *Midas*, stranded on Bunbury Bar, 10th March. Inquiry held at Bunbury, Western Australia. No blame attached to master. Vessel dragged her anchors during a violent storm.

37. *Bombay*, of London, stranded in Balabac Straits, 6th March. Inquiry held at Singapore, before F. Snowden, Esq., Senior Magistrate, H. Ellis, Esq., Acting Master Attendant, and J. L. Kirk, Esq., Lloyd's Surveyor. Master might have acted more prudently. Certificate returned with a caution.

38. *Maria*, stranded on Bramble Reef, 27th February. Inquiry held before the Marine Board, Brisbane. After the wreck, the mate was murdered by the natives at Tam O'Shanter Point. The Court was of opinion that he was quite unfit for the post he had occupied.

39. *Claro Babuyan*, stranded 30th January and on the 23rd or 24th of March. Inquiry held at Shanghai, before C. Alabaster, Esq., Vice Consul, Lieutenant F. Papellon, R.N., H.M.S. *Juno*, Navigating Lieutenant G. A. Broad, R.N., T. Elsdon, master of the *Dartmouth*, and B. Younger, master of the *Columbia*. Master guilty of carelessness. Certificate suspended for six months.

MARITIME LAW.

IMPRISONMENT OF A MASTER FOR NOT TIMING A LIGHT.—THE "SUSSEX."
 —The master of the *Sussex* was charged, under the 239th section of the Merchant Shipping Act, 1854, which enacts that masters who, by "wilful breach of duty," or "neglect of duty," do any act tending to the loss of ship, or the lives of those on board, shall be deemed guilty of a misdemeanour, with neglect of duty, in having, *inter alia*, failed to ascertain with certainty that a light, seen on her starboard bow, on the 31st Dec., 1871, was the Cape Schenck Light. It appeared that in consequence of the omission of the master to verify his position by timing the light, which was subsequently found to be a pilot signal, and taking soundings, he erroneously shaped his course towards Barwon Head, when the ship was wrecked, with loss of life. The judge, having explained the difference between culpable negligence and criminal neglect, the jury found that the master had endangered the lives and limbs of his passengers and crew, by neglecting to take the precaution to time the revolutions of the light he mistook for the Schenck Light, and he was accordingly sentenced to be imprisoned for one calendar month.—*Melbourne City Court, Feb. 23, et seq. 1872.*

IMPRISONMENT OF AN ENGINEER.—THE "BLADWORTH" (s.).—The chief engineer of the *Bladworth* was charged with unlawfully refusing to obey the commands of the captain, at Constantinople, on the 23rd March. It appeared that the defendant received orders to get up steam in four hours, for sailing at ten o'clock at night, but as he refused to obey the command, the vessel was detained in port until the following morning, when he was superseded by the second engineer, who took charge of the engines. The magistrate ordered the defendant to be imprisoned for four weeks, with hard labour, to forfeit two days' pay, and pay £1 3s. costs.—*Thames Police Court, May 8, 1872.*

SHIP GROUNDING ON DOCK SILL.—THE "J. C. BOYNTON."—**QUEEN'S BENCH, APRIL 19.**—In an action tried at the East Liverpool Assizes, for the loss of the *J. C. Boynton*, whilst leaving the Liverpool Dock, in charge of a pilot, it was alleged that it was the duty of the dock master, who is required by the Dock Acts to give directions as to the time and manner in which vessels are to leave the docks, to have warned the master to keep to the centre of the dock sill, where alone there was sufficient depth of water. The vessel, in passing out, kept too much to one side, and grounded on the dock sill, where she was destroyed by the waves. The jury, having found for the defendants, the Dock Company; the plaintiff moved the Court of Exchequer for a rule to set aside the verdict, and that the plaintiff was entitled to a new trial. The Court considered that there was nothing to show that the duty alleged rested on the dock master, and that there was evidence that the accident was

caused by negligent steering; they, therefore, refused the rule.—*April 19, 1872.*

OBLIGATION TO SHOW A LIGHT.—THE "PARRY."—CITY OF LONDON COURT, APRIL 25, 1872.—In an action for damage, caused to the *Early Sunderland*, through running foul of defendant's barge, *Parry*, which had been left in mid-stream, off Greenwich, without displaying a light, it was contended that the rule as to lights applied to sea-going vessels, and not to river barges; but the Court held that a person causing an obstruction in a navigable river, was as much bound to exhibit a warning light as a person placing an obstruction in a highway.

DESERTION.—PROOF OF EXECUTION OF AGREEMENT.—The Merchant Shipping Act, 1854, which directs that all seamen joining British foreign-going ships, in British, Colonial, or foreign ports, shall sign the agreement in presence of a superintendent of mercantile marine, shipping master, or consular officer, who must attest their signatures, does not, in express terms, make the attestation of such officials, evidence of the engagement. It is therefore desirable, as will be seen by a recent decision of the stipendiary magistrate, at Cardiff, that masters of ships, engaging seamen abroad, should have the articles signed in presence of themselves, or one of their officers, so that proof of the engagement may be forthcoming, if required. The agreement should also be clearly and carefully worded, to avoid misconception. Seven seamen were charged with desertion by the master of the *Eagle*, who had engaged them before the consul at Hamburgh, "to proceed to Cardiff, and there to be discharged, at the master's option," and thence to go, if required, to other ports abroad, but the seamen, who considered that they were to be discharged at Cardiff, left the ship at that port. The signatures on the agreement had been duly attested by the consul, but the agreement was somewhat vague, and as the master was unable to prove that he or any other person was present when the men signed articles, the stipendiary magistrate dismissed the case.—*Cardiff Police Court, March 19, 1872.*

MUTINY ON THE HIGH SEAS.—THE "HANNIBAL."—ILFORD PETTY SESSIONS, APRIL 17.—George Matthews, Patrick O'Brien, and six other seamen of the *Hannibal*, were charged, on remand, with mutinous conduct on board that vessel, and violently assaulting the master and chief mate, on the 14th March last, on the high seas, whilst on a voyage from Calcutta to London. The charge having been proved, the Bench found all the prisoners guilty of the offence in a greater or less degree, and sentenced Matthews and O'Brien, who were the worst offenders, to twelve weeks' imprisonment with hard labour, the other six seamen being imprisoned for periods varying from six to eight weeks. O'Brien, who made use of violent and offensive language on leaving the Court, was also ordered to find sureties to keep the peace for an additional term of six months, or in default to be imprisoned for that time.

LIABILITY OF MEMBERS OF SHIPOWNERS' MUTUAL INSURANCE ASSOCIATIONS.—THE ALFRED AVERAGE ASSOCIATION.—EQUITY COURTS.—In this case application was made by a member of the Alfred Average Association to obtain the opinion of the Judge as to whether he was liable, as decided by the official liquidator appointed on the winding up of the Company, for losses sustained after the period when he alleged he ceased to be a member. The Vice-Chancellor said it appeared that the applicant, who had paid up his subscription for the current year, and made a formal application to the Company to be allowed to withdraw his ships and have his policy cancelled, had availed himself of the only means in his power of withdrawing from the Association, and that, as his request had been complied with, and his application duly entered upon the Company's books, the Association, which was subsequently wound up, could not treat him as a continuing member; he, therefore, declared that the decision of the official liquidator could not be sustained, and that the applicant was not liable for any losses incurred after the day he applied to have his ships withdrawn and to be allowed to retire from the Association.

INQUIRY INTO THE LOSS OF THE "QUEEN OF THE THAMES."—This case arose out of an application for a rule to show cause why a *mandamus* should not issue to require the magistrate at the Greenwich Police Court to hold an investigation into the loss of the *Queen of the Thames* (s.s.) It appeared that an inquiry into the loss of the *Queen of the Thames* had been held at the Cape of Good Hope, before the resident magistrate, at the village near which the vessel was wrecked in March, 1871. The magistrate reported that no one was to blame, and forwarded the report to the Governor of the Colony for confirmation in manner required by the Colonial Merchant Shipping Acts, one of which contains the provisions of the English Merchant Shipping Acts relating to investigations into losses of ships. The Governor of the Colony, who deemed the report unsatisfactory, directed the magistrate to take further evidence, and as this was objected to on the ground that the former evidence was conclusive, he endorsed upon the report that he did not confirm the decision. In consequence of representations made to the Board of Trade, a further investigation was ordered by that department to be held, before the stipendiary magistrate at Greenwich, under the provisions of the Imperial Merchant Shipping Acts, but the magistrate held that the colonial inquiry was conclusive, and decided that he had no jurisdiction to proceed with the investigation. The Court, after hearing the arguments, granted a rule for a *mandamus* to the magistrate to proceed with the investigation. (Court of Queen's Bench, *in banco*, April 25, 1872).

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.

PROMOTIONS.—**C.**—Duncan G. Davidson, 1863; George Robinson, 1865; Nathaniel B. Smith, 1866. **Cr.**—Horace W. Rochfort, 1860; Richard Evans, 1861; Noel S. F. Digby, 1861. **St. Sn.**—Alexander Fisher, M.D., 1861.

APPOINTMENTS.—**C.**—George S. Nares, 1869, to *Pembroke*, additional, for special service; Hon. William H. Ward, 1864, to *Swiftsure*; Charles M. Buckle, 1866, to *Research*. **Cr.**—Prescott W. Stevens, 1867, to *Bittern*; George Parsons, 1865, to *Rinaldo*; Henry F. Cleveland, 1868, to *Swiftsure*; Richard D. Harrington, 1864, to *Nimble*; John F. L. P. Maclear, 1868, to *Pembroke*, for special service. **L.**—Berkley G. A. Belson, 1866; Dudley C. Stuart, 1866; Frederic G. Dundas, 1867, and Henry A. Baring, 1871, to *Swiftsure*; Edward G. Hutton, 1867, to *Resistance*; Hugh G. Gough, 1870, to *Hercules*; Lawrence Ching, 1868, to *Swiftsure*; George H. Blake, 1862, to *Flora*, for service at Ascension; Henry M. Ommanney, 1861, to *Himalaya*; Cosmo F. M. Gordon, 1864, to *St. Vincent*, additional for *Martin*; Francis C. R. Baker, 1861, to *Cherub*; Francis J. J. Elliott, 1865, to *Duke of Wellington*; Francis C. de Lousada, 1862, to *Coquette*. **S. L.**—Edward L. de Mandeville, to *Duke of Wellington*; George F. Raggett, to *Hotspur*; Horace H. Barnard, Walter F. Stirling, Bryan J. H. Adamson, and Innes Gardiner, to *Swiftsure*; Henry E. O'Neill, to *Aqincourt*, as supernumerary; Henry C. A. Morshead, to *Swiftsure*; Henry C. Sloggett, to *Pembroke*, for special service; Alfred A. Taylor, to *Duke of Wellington*, as supernumerary; Edward H. Howell, to Royal Naval Reserve. **M.**—Arthur W. Carter, Hon. Hedworth Lampton, Andrew W. Davies, A. S. Dorrien, Ernest M. Drummond, George M. Dolphin, Richard M. F. Meade, and William H. Arnold, to *Endymion*, as supernumeraries; Hon. Robert M. King, Charles W. W. Ingram, and Edward G. Shortland, to *Minotaur*, as supernumeraries; Henry Leeke, Ernest A. Symons, and Douglas A. Gamble, to *Sultan*, as supernumeraries; William F. D. Walker, Hans T. F. White, Arthur H. D. Ravenhill, William L. Macarthy, and Dayrell Davies, to *Northumberland*, as supernumeraries; Richard A. Gwynn, Cortland H. Simpson, Hon. Hugh Tyrwhitt, and Arthur G. Gunner, to *Hercules*, as supernumeraries; Arthur J. Kempe, to *Sultan*, as supernumerary; Hugh P. H. Benwell, Alexander W. W. Forbes, William F. Tunnard, John G. Jenkins, and Wilfred Powell, to *Swiftsure*; Henry S. Tuke, to *Sultan*. **Cn.**—Rev. Henry P. Goodridge, to *Swiftsure*; Rev. Edward L. Bowman, B.A., 1854, to *Duke of Wellington*; Rev. George M. Sutton, 1872, to *Black Prince*. **N. Inst.**—Henry C.

Binmore, 1871, to *Swiftsure*; Richard A. Fowler, 1861, to *Duke of Wellington*; Frank Buckley, B.A., 1856, to *Minotaur*; Thomas O'Connor, M.A., 1869, to *Minotaur*. **Sn.**—George B. Beale, M.D., 1870, to *Achilles*; John Tyndall, 1871, to *Caledonia*; George W. J. Sutherland, M.D., 1866, to *Danae*. **P.**—Benjamin Urwick, 1869, as secretary to Rear-Admiral R. J. J. G. Macdonald. **A. P.**—Alfred H. L. Giles, 1871, to *Penelope*. **Cl.**—Henry N. Harvey, to *Resistance*.

RETIREMENTS.—**C.**—Edwin A. Porcher, 1868; William H. Haswell, 1858. **St. C.**—Frederick J. O. Evans, F.R.S., 1867. **Cr.**—William T. W. Hambly, 1866. **L.**—John L. Wilson, 1868; Charles A. Crespín, 1866. **S. L.**—John W. C. Campbell, 1868. **N. Inst.**—Frank Buckley, B.A., 1856. **St. Sn.**—Charles Forbes, M.D., 1866; William Banks Fegan, 1864. **A. Sn.**—John McK. Hollingworth, 1863. **A. P.**—Dixon P. Sambell, 1862; Lewis G. Hodder, 1866; D. Fraser, 1869; Joseph J. Gormully, 1866; William O. Greenslade, 1867.

DEATHS.—**C.**—George Delm , 1856, *r.* **Cr.**—William Hamilton, 1861, *r.*; Hon. Archibald St. Clair, 1866; Thomas Clack, 1851, *r.*; Charles Brand, 1864, *r.*; Edward Andrews, 1864, *r.* **St. Cr.**—Frederick W. Rea, 1867. **L.**—Sydney T. H. Dickens, 1872. **P.**—John Marks, 1813, *r.*; William B. Basclen, 1805, *r.*; George T. T. Cheyney, 1871; John Grant, 1832, *r.*

CONSULAR APPOINTMENTS.

CONSULAR APPOINTMENTS.—The Queen has been pleased to approve of the following appointments for the Republic of Liberia, James Jackson as Consul-General in London; for the German Empire, Mr. C. G. Stahlknecht as Consul at Singapore; for Bombay and the Presidency thereof for His Majesty the King of Sweden and Norway, Mr. J. H. Riebe as Consul.

CONSULATE OF LIBERIA.—Mr. J. Jackson, of 36, King William Street, has received the Queen's confirmation of his appointment as Consul-General for the Republic of Liberia.

OFFICIAL APPOINTMENTS.—To be Governor and Commander-in-Chief of the Island of Malta and its Dependencies, Lieut.-General Sir Charles Thomas Van Straubenzee, K.C.B. To be Lieutenant-Governor of the Colony of Natal, Anthony Musgrave, Esq., C.M.G.

CANTON.—It is announced in the *Gazette* that Mr. Daniel Brooke Robertson, C.B., Her Majesty's Consul at Canton, has been knighted.

TRIESTE.—Mr. Charles Lever died at Trieste, from disease of the heart. Mr. Lever was 63 years of age, having been born in 1809. He was, as is well known, an Irishman by birth, though educated at Cambridge and Gottingen. He was appointed by Lord Derby, Vice-Consul at Spezzia in 1858, and was transferred to Trieste in 1867.

MOSUL.—Mr. C. A. Rassam, who has acted as British Vice-Consul at Mosul for the last 30 years or more, died at that town on the 30th May.

REWARD.

NETHERLANDS.—The Netherlands Government has presented Captain H. LAWSON, Hill-street, Montrose, Commander of the *Mary*, owned by Messrs. J. Johnston and Sons, of that port, with the gold medal (the highest recognition conferred), for his noble and generous conduct in rescuing Captain van der Meyden and crew, of the Dutch vessel *Daniel*, on April 2 last, in lat. 41° N., long. 10° W., their vessel being at the time in a sinking state.

GENERAL.

THE LOSS OF THE "HALCYON" (S.S.).—A correspondent asks: "Who killed Cock Robin? Who slew the Halcyon?" "The Tide," says Captain Bertridge; "the Tide slewed the Halcyon." "As to the accident, it was caused solely by the strong tide taking the bow of the ship and slewed her round, notwithstanding that the helm was hard to port. The action of the tide prevented the ship from obeying her helm." But does the tide act in this way? is it not the fact that a vessel is merely *carried* with a tide or current without being *slew*ed at all more than the bend there may be in the direction of the stream. Is there, he asks, any current in any part of St. George's Channel of such a character as will sensibly affect the steering of any vessel?

AUTHORISED CHANGES OF NAMES OF SHIPS.—*Artizan* (s.s.), of New York, changed to *Elcano*, of Liverpool; *Bison* (s.s.), of Glasgow, changed to *Belize*, of London; *Southampton*, of New York, changed to *Lock Gail*, of Liverpool; *Dunraverty* (s.s.), of Campbeltown, changed to *Little Alice*, of Dundee; *Lizzie*, of Liverpool, changed to *Edith Brooke*, of Liverpool; *Annan and Whitehaven Trader*, of Dumfries, changed to *Bride*, of Douglas; *Kong Brage* (s.s.), of Liverpool, changed to *Avalon*, of London; *Alabama*, of Liverpool, changed to *Ceres*, of Liverpool; *Cynric*, of Newcastle, changed to *British Army*, of Liverpool; *Clyde*, of Scarborough, changed to *Mollie Carew*, of London; *Glen Sannox*, of Liverpool, changed to *British King*, of Liverpool; *Victory*, of Glasgow, changed to *Marquis of Lorne*, of Glasgow; *Fenella*, of Southampton, changed to *Ajacanora*, of Portsmouth; *Europe* (s.s.), of Southampton, changed to *European*, of Southampton; *L'Imperatrice*, of London, changed to *Outalpa*, of London; *Bosphorus* (s.s.), of Liverpool, changed to *Ferntower*, of Liverpool; *Ottawa* (s.s.), of Glasgow, changed to *Manitoban*, of Glasgow; *Gt. Northern* (s.s.), of Liverpool, changed to *Northern*, of Liverpool; *Midland* (s.s.), of Liverpool, changed to *Southern*, of Liverpool; *Prince of Wales* (s.s.), of Bristol, changed to *Gipsy King*, of Liverpool.

STOPPING HOLES IN SHIPS' BOTTOMS.—Mr. McCool writes to say that his plates are made with dies, and cannot be shaped on an anvil, and that he believes he has a fair claim to originality in his invention, if he can show that no one has manufactured similar plates and bars, and adequate apparatus for every ship to carry, so that no time be lost when real danger is at hand, has never been provided by shipowners up to the present time. We did not dispute Mr. McCool's original ideas as to having special plates and bars always ready, we merely endorsed Capt. Watson's statement, that leaks have been stopped by plates put into their places by means of messenger lines lowered through the holes.

THE PAUMBEN CHANNEL.—We are very glad to observe that there is a prospect of this channel, between Ceylon and the mainland of India, being made available for vessels from Suez to Madras and Calcutta. The difference between the present route round Ceylon, and the proposed route through the Paumben Channel, is more than 350 miles in favour of the latter, which would enable the voyage to Madras or Calcutta to be shortened by three days at least. The work of deepening the present shallow pass will occupy some little time, probably six years, but it would be of great advantage when completed. We sincerely hope the revival of the proposition to undertake this work will not meet the fate of previous proposals, and gently "slide" out of sight and mind.

THE SUEZ CANAL.—Captain Steele, of the *Erl King*, in an exceedingly well-written essay, which he modestly calls a "Round-about Paper," has given to the world his views on the Suez Canal. His paper will be read with interest by two classes of readers, for, whilst there is much in it for mariners that is purely technical, there is sufficient of political economy to attract the general reader. At the present moment anything, whether a pamphlet, letter, or mere paragraph, that calls attention to the critical state of the Canal and the necessity of united action, is of importance. The act of concession enables the company to charge on "capacity" of the ship, and they have raised their rates to the gross tonnage an addition of 30 to 50 per cent. The honourable member for Hull, Mr. C. M. Norwood, has already, in the House of Commons, moved in the matter of the canal dues, and we understand that influential meetings are being organised throughout the country, and that petitions are in course of preparation urging Her Majesty's Government to action.

SPRING SAFETY VALVES.—In accordance with the permission given by the Board of Trade in their circular, No. 583 (a copy of which was advertised in the *Nautical Magazine* for April last), Messrs. Maudslay Sons, and Field, have recently fitted the boilers of their steam ship *Adriatic* with Ramsbottom's duplex safety valves. The experiment has been attended with complete success. "They work most admirably"

(says the chief engineer of vessel, with a copy of whose report we have been favoured). "I found that as soon as the steam reached the pressure to which they are loaded, they at once acted. And in the heaviest weather I could carry the pressure without any loss, which would have been impossible with the ordinary loaded valves." We believe that in endeavouring to obtain the best spring safety valve, engineers are doing something likely to be of great value to our Mercantile Marine. We trust that our readers will co-operate in the matter.

HELIGOLAND.—The Government of Heligoland have bought up the bathing establishment there and have closed the gambling tables, so that our red sandstone rock off the mouth of the Elbe is no longer a little hell in which German bathing guests may lose money, reputation, and temper. The finances of this colony, or British possession, are improving, and, and the Government is in the midst of bricks and mortar. Heligoland is in the Hull division of Coastguard, and has a lifeboat and rocket apparatus. Heligoland was a short time ago noted for its wreckers. The Government have, however, now invested in a tug steamer, in accordance with the value of the service it has rendered, is detested by the Islanders. That she has done good service is proved by the money paid as salvage, by the terms of praise in which the Hamburg papers speak of the ship, and by the amount of dislike evinced towards her by the boatmen. Heligoland without gaming tables, without wreckers, and with a revenue, is a tribute to the able management of his Excellency Fitz Maxse, Lieut. Colonel and Governor.

REFERRING to "Steam in Motion" in our March number, a reviewer in *The Daily Telegraph* in a mirthful and clever notice of our paper, in a fever of curiosity, demands who "Joule" is. The writer evidently thinks our printer's devil has substituted "Joule" for "Ghoul." To the reviewer as to many others, "Joule" and "Ohm" are brother ogres, and we recognise the one as the genius of fire, and the other the genius of lightning. "Joule" being not unlike "Ghoul," and "Ohm" being identical in sound with "O'm" the awful name, no Brahmin dares to pronounce, and hence let us say arises the misunderstanding.

THE MARKING OF PLEASURE YACHTS.—Yachts belonging to the following yacht clubs have been exempted from marking their names on the stem or stern, and from marking scales of feet:—The Royal Yacht Squadron; The Royal Cinque Ports Yacht Club; The Royal Albert Yacht Club; The Royal Alfred Yacht Club; The Royal Victoria Yacht Club; The Royal Northern Yacht Club; The Royal Western Yacht Club; The Royal Welsh Yacht Club; The Royal Ulster Yacht Club; The Royal Thames Yacht Club; The Royal New Thames Yacht Club; The Royal Junior Thames Yacht Club.

A WHALEBOAT capsized, and two Coastguardmen drowned, on going out in answer to signals of distress from the *Rival* and *Messenger*. Inquiry ordered 21st March, to be held by Captain J. Toyntee. Captain Toyntee reports that there ought to be some statutory signals of distress, and that there should be communication between the lifeboat's crew and the coastguard. The Secretary of the Lifeboat Committee knew that the two brigs were not in imminent danger, but did not communicate his knowledge to the Coastguard officer. The lifeboat did not go out, but the Coastguard boat did, and the result was that two men were drowned. The brigs were making distress signals in order to get a tug or a pilot.

COAL AT ZANZIBAR.—The Acting British Consul at Zanzibar has forwarded specimens of surface coal found within the southern district of the Zanzibar dominions. A party will probably be organised and instructed to dig into the coal seam discovered, and to bring away samples to be tested.

ISMAIL DECLARED A FREE PORT.—Art. 1. Ismail is declared a free port. This law is to be carried into effect from January 1, 1873. The dyke surrounding the town of Ismail, the Custom House premises at the barriers, and the needful repairs for keeping the same in good condition, are to be at the charge of the commune. Art. 2. Agricultural produce forwarded to Ismail from Russian Bessarabia, which will enter Roumania at Tabac and Tartarbanar, will not pay import duty, but only the export dues. The export tax will be paid by the importers on the importation of the produce, a guarantee being given that the produce imported will be exported within the term of six months from its importation. In cases of importers not proving that they have exported the produce within the term above-mentioned, they will be obliged to pay the import tax, the produce being considered as applied to internal consumption, the export tax that was paid upon it being returned. Art. 3. Tobacco, arms, and munitions of war are excepted from the right of freedom of the port. Art. 4. A special regulation will provide for the application of these provisions, all precautions being taken against the fraudulent infringement of the fiscal interests of the State.—*Consular Dispatch*.

ANCONA CUSTOM HOUSE.—The Board of Trade have received a copy of a despatch from Her Majesty's Minister at Rome, reporting that the Italian official *Gazette*, of the 29th ultimo, contained a Royal Decree to enable the Custom House at Ancona to receive goods in deposit after the 1st inst.

SCARCITY OF SEAMEN.—We learn upon good authority, that during the months of April and May (and the latter month especially), great difficulty has been experienced by shipmasters in obtaining crews for

their vessels in the ports of the Tyne. This is attributed to the fact that a large number of seamen now ship on board steamers as firemen, in which capacity they obtain a higher rate of wages. This would be met by a rule suggested by the Liverpool shipowners, that no man should serve as A.B. unless qualified by a stated amount of service as a seaman, and duly certified; but on the other hand, the recent strikes of seamen, especially felt at Glasgow, Southampton, and London, tend to show that in the event of the Liverpool suggestion being adopted, which would give to an A.B. a sort of certified rank somewhere below a second mate, these strikes would be more disastrous; as we pointed out in our article in our May number of the present year.

REMOVAL OF LONDON SHIPPING OFFICES, &c.—The Offices of the Local Marine Board, and the Examiners of Masters and Mates, have been removed from No. 5, East India Avenue, E.C., to commodious and central premises in the St. Katharine Dock House, Tower Hill. The Offices of the Surveyor-General of Steam Ships, the Board of Trade Surveyors and Inspectors, and the Examiners of Engineers, have also been removed to the same building, to which all communications intended for the Local Board, or for any of the above-named officers should, for the future be addressed. It is anticipated that about the second or third week in August, the Mercantile Marine Offices for shipping and discharging seamen and other business, will probably be removed from Hammet Street, Minories, and the Sailors' Home, Dock Street, to the same locality.

CANDIDATES WHO HAVE RECENTLY PASSED IN COMPASS DEVIATION.

Name.	Christian Name.	Number of Certificate.	Where Examined.
Bradley	George	18,548, O.C. (Voluntary)	South Shields
Edwards	Arthur McKenzie	38,682, O.C. (Voluntary)	Liverpool
Bain	Richard	6,454, O.C. (Voluntary)	Liverpool
Lawrence	William Christie	88,167, Ex.	Dundee
Dawson	John	84,737, Ex.	Liverpool
Wright	Daniel	3,814, O.C. (Voluntary)	Greenock
Mavor	James	24,229, Ex.	Aberdeen
Thyne	James	22,156, Ex.	Glasgow
Miller	Cyrus J.	20,558, Ex.	Liverpool
Doig	Andrew	81,750, O.C. (Voluntary)	Dundee

"MACGREGOR LAIRD."—OFFICIAL INQUIRY.—It may be within the recollection of our readers that exception was taken by the Mercantile Marine Service Association at Liverpool, and also by a portion of the Liverpool press, to the decision of the court upon the the official investigation into the loss of the "Macgregor Laird" upon the ground that the rock in Corisco Bay, upon which the ship was wrecked, was not correctly laid down on the chart, but was from two to two-and-a-half miles from the shore. We are now enabled to state that one of H.M.'s ships has just examined the spot in Corisco Bay on which the steamer was wrecked, and where her hull still remains, and that the position of the rock is almost identical with that shown on the Admiralty Chart, as one mile from the shore.

PORT OF LISBON.—No steamer admitted to free pratique is allowed to anchor at Belem, or any other place outside the usual anchorage opposite the Lisbon Custom House, unless it can be proved that her machinery was in such a state as not to allow her to proceed to said anchorage.

PROBLEMS.

SOLUTION of question No. 2, given in the *Nautical Magazine*, for the month of June, 1872. Numbers which are in geometrical progression taken, some or all of them together, with plus or minus signs as may be necessary, have the property of making any total from unity to the sum of the series inclusive.—Therefore 1, 3, 9, 27, being numbers in G. P., whose sum is 40, any weight from 1 lb. to 40 lb. may be weighed by using the four weights, 1 lb., 3 lb., 9 lb. and 27 lb.—J. ELFORD, H.M.S. *Britannia*.

A gentleman, living at New York, sends his sister to San Francisco, and being anxious to learn of her safety as she journeyed along as often as he could, he requested her to send him back a written message by each train that passed her, going to New York. Supposing, therefore, one train to leave each end daily at the same time, and the whole journey of each train to occupy seven days, how many of these written messages would the brother receive from his sister?

Starting from London, going to the North Pole, what true course would you steer, supposing no obstruction? Starting from Canton, going to the North Pole, what true course would you steer, supposing no obstruction? Having got to the North Pole, what course would you steer to return to London and to Canton respectively? What difference would there be between the two courses, and what precautions would you take to distinguish between them? This question supposes an open sea and a great circle course possible for each of these voyages.

THE
NAUTICAL MAGAZINE.

NEW SERIES.

AUGUST, 1872.

WEATHER WARNINGS AND CASUALTIES TO SHIPS AND
IN MINES.

THE intimate relation of atmospheric disturbances to explosions of "fire-damp" in coal mines, has been clearly demonstrated by careful statistical records of the years 1868, 1869, 1870.* The statistics furnished by Messrs. Scott and Galloway are accompanied by a diagram exhibiting the barometrical and thermometrical variations for every day in the three years, along with the colliery explosions during that period in the coal districts of England, Wales, and Scotland. More than two-thirds of these casualties, it is shown, are distinctly traceable to atmospheric agency. Out of 525 explosions recorded in the three years, 71 per cent. are thus accounted for. Of these, by far the greater number, amounting to nearly 50 per cent., may be reasonably connected with disturbances indicated by the barometer, while 22 per cent. are coupled with abnormally high temperature. That meteorological changes are the proximate causes of a large majority of the explosions in mines, equally with the majority of marine casualties, must be admitted. In other words, both casualties at sea and in mines are due to meteorological disturbances, indicated either by a fall of the barometer or a rise in the thermometer. As indications are unerringly given of the state of the atmosphere likely to cause explosions in mines, they are rendered to some extent preventable by a system of "warnings" analagous to those employed to warn mariners of the approach or existence of storms at sea. The

* Messrs. Scott and Galloway on the Connexion between Explosions in Collieries and Weather. Proceedings of the Royal Society. No. 134, 1872.

appalling frequency and the frightful character of mining disasters, demand that all preventive and precautionary measures available should be taken. The more so, as it would appear that the number of *serious* accidents, involving the loss of ten or more lives, has very materially increased during the last few years. The number of serious explosions during the years 1851-1855 (inclusive), was 13; 1856-1860, 15; 1861-1865, 12; 1866-1870, 21. Between the 10th and 18th December, 468 lives were lost in six different explosions, the two accidents at the "Oaks" colliery causing 361 deaths. The practicability of averting these calamities by systematic weather-warnings, giving timely notice of their probable occurrence, is illustrated by some remarkable instances of the coincidence of explosions with stormy weather, periods of excessive heat, and other meteorological irregularities. There can be no doubt of the coincidence of certain serious explosions with severe storms. A notable instance of this will be found on the 8th of October, 1870. But it is to be remarked that the explosions do not happen only at the commencement of a barometrical depression, but occur also two or three days after the barometer has reached its lowest point and is rising. And, as a general rule, we do not find a succession of explosions at a time when the barometer is in a state of continued violent oscillation. The causes of this prolongation (or retardation) of the dangerous period is that when fire-damp issues in greater quantity than usual from cavities and fissures into the workings, and more especially into places where the air is stagnant and already more or less foul by the admixture of gas, the volume of the explosive portion of this mixture will increase in consequence of the increased rapidity of diffusion; or, in other words, the explosive boundary will extend itself. This extension of the explosive boundary is gradual, and in some cases a considerable time may elapse before the boundary has reached its extreme limits, and begins again to recede. During all this period the mine will be in an abnormally dangerous state.

Meanwhile, the pressure of the atmosphere rises, and a current sets in backwards into the cavities whence the pure gas has just issued. Yet if the entrance to such a cavity be at a lower level than the highest position of the space occupied by such escaped gas, it is evident that what is driven back into the cavity will be a mixture of gas and air, and that no portion of the gas which lies above the level of the aperture of the cavity can be driven back into it. Accordingly, a certain volume of this pure gas remains diffusing itself freely, and fouling the surrounding air. It is evident from these considerations that in the case of continued unsteadiness of pressure, and repeated violent oscillations of the barometer, we need not expect that each of these reductions of pressure will cause the efflux of a quantity of gas proportionate to the extent of

such reduction. If the successive falls of the mercury are of less magnitude than the first, or than any previous one in the series, the quantity of gas given off cannot possibly be as great on each occasion as if that fall had been preceded by a period of high pressure. If, however, any of the later oscillations be more serious than their predecessors, a certain fresh supply of pure gas will be given off. Thus the apparent occurrence of the connexion between the atmospherical phenomena and their sequence in operation is hereby fully accounted for. We may enumerate some striking instances of the apparent relation of explosions to meteorological conditions, manifestly in the order of cause and effect. We will take first those accidents which are apparently attributable to *barometrical* causes; in other words, cases of explosions coincident with stormy periods. For instance, in 1868 we find that the first quarter of the year was exceptionally stormy. Within a period of sixty-three days (comprised between the 12th of January and the 26th of March), as many as *twenty-seven* distinct storms passed over the north of Europe. Thirty accidents which occurred during this period are attributable to barometrical causes. On the 21st of April we find a serious storm accompanied by five accidents. We have another group of five, accompanying the heavy storm of December 21st.

On the other hand, the storm of February 12th, 1869, which was very destructive to shipping in the Channel, was not marked by any colliery accident, as the oscillation of the barometer, unusually violent as it was, did not extend beyond the southern stations, and was transient in its character. This is an obvious instance of "exception proving the rule."

On the 15th of June, in this year, we find a storm, with four explosions, apparently consequent.

On September the 1st, a heavy gale swept up the Channel, and we find at this time a batch of accidents which may reasonably be attributed to barometrical causes.

In 1870, two explosions are connected with a storm on January 8th.

The month of October in this year was particularly stormy, and we have three batches of accidents in connexion. Five explosions on the 8th, followed by three a few days later, and towards the end of the month we find six explosions in three days. Turning to the consideration of accidents, coupled with increase of temperature, we find that, though by no means so numerous as those in the former category (49 per cent. being reasonably connected with disturbance of the barometer, while 22 per cent. are presumably referable to abnormally high temperature), the connection is even more evident, the coincidence more obvious, and the causation more apparent. It is observable that the recurrence of warm weather, in the spring and summer, invariably brings in its train numerous explosions. The first of the summer heats (so to call them)

in April and May, are surely followed by a batch of accidents, and similarly those at the beginning of June and July, Accidents referable to temperature are also reported up to the middle of September.

In 1869, the 17th of July was a very hot day, followed by a succession of similarly hot days, and accordingly we find six explosions close together, the last on July the 21st, being the memorable "Haydock" accident, which cost fifty-nine lives.

In the following year (1870) a sudden outbreak of hot weather in the middle of May, accounts for two explosions in the coal fields adjacent to the Observatory at Stonyhurst, as well as for an explosion in the west of Scotland.

Very hot weather in the beginning of June is attended by three explosions on the same day—the 4th, and followed by two after-claps on the 6th and 8th. Later in the same month we have four days of exceptionally hot weather, especially in the centre and south of England, and out of six accidents reported at this time, two were in the southern and central coal fields. Similarly in the months of July and August, various explosions are to be connected with the high temperature prevailing. At the end of the month the weather became very warm, and we find six explosions close together.

There is an opinion extant amongst some of the more illiterate and ill-informed of the population of mining districts, that the warm weather, coming in suddenly, sets the gas on fire. This is, of course, nonsense; but the philosopher explains how it is that explosions do follow any sudden inset of hot weather. When the temperature of the air in a mine is greater than the temperature of the air on the surface of the earth, the mine ventilates itself; therefore, in cold weather, nature does the work completely: but when the temperature of the surface atmosphere rises, natural circulation is retarded, or even ceases; and if the rise in temperature is accompanied by fogs, or mistiness, the case is worse. It is when the thermometer is about to rise, or the barometer is about to fall, that all the system of artificial ventilation at the command of the overlooker of the mine should be set in full operation to clear the workings.

A storm warning is often useless to seamen, for the reason that they are often too far from the shore to see it; but this is not the case with a warning to miners. In the beginning of the year 1868 the Meteorological Committee proposed to send telegraphic intelligence of storms to colliery proprietors. We are at a loss to understand why a measure of such obvious benefit and inestimable advantage should have been deferred.

THE BRITISH CONSTITUTION AND GOVERNMENT :

A DESCRIPTION OF THE WAY IN WHICH THE LAWS OF ENGLAND ARE
MADE AND ADMINISTERED.

(Continued from our July Number.)

CHAPTER IX.—PROCEEDINGS IN PARLIAMENT.—(Continued.)

THE peculiarity of the House of Commons is, that it is wholly subject to the will of the people ; the peculiarity of the House of Lords is, that it is almost wholly independent of the people. If both Houses were subject to the will of the people, that is, if both were elected, they would be both influenced by similar motives ; and anxiety to conciliate the electors might lead to the passing of measures without sufficient consideration. If, on the other hand, the members of both Houses were wholly independent of the people for their position as legislators, they would have too little regard for the wishes of the people, to whom much would be denied that they are justly entitled to. But, although the Lords may be said to be independent of the will of the people, for their position as legislators, they cannot be said, in these days, to be independent of, or insensible to, public opinion. Their exalted position keeps them constantly in view, and their most trivial public actions are minutely scanned, and openly criticised. Under these circumstances, it may be said, that by the present constitution of Parliament, the just balance is attained, for while, on the one hand, the Commons cannot press measures forward rashly, the Lords are unable to resist a strong representation of the wishes of the people, as expressed by their representatives in Parliament, and by the people, themselves, in public meeting.

There are some slight differences in the mode of procedure in the two Houses. Peers can vote by proxy, for instance, and by this means a Peer, who does not attend in the House, while a question is being debated, may authorise another to vote in his stead. No Peer, however, can represent more than two other Peers in this way, and a Bishop can hold only a Bishop's proxy. Proxies are not allowed to count on divisions taken in Committee, because no one can foretell upon what point the Committee may divide, and because a vote in Committee should be given upon the basis of the discussion which preceded it. A Peer, in giving a proxy to another, may limit the use of it to a particular question.

Although members of the House of Commons cannot vote by proxy, they can pair. This practice is common to both Houses, and amounts to a private arrangement between members of opposite opinions. If a

member in favour of a motion desires to be elsewhere when the House divides upon it, he may pair with another, who is opposed to the motion, and also desires to be relieved from the obligation to attend. In this way, neither side loses a vote, because the one absentee neutralises the other.

Members returned to the House of Commons are bound, strictly speaking, to attend, nor may they presume to absent themselves from the sittings of the House, without leave. Upon a sufficient reason being given, leave of absence will be granted by resolution of the House, and among other reasons held to be sufficient, may be mentioned attendance at assizes, or illness of a near relation. Sometimes members who have absented themselves, although nominated to serve upon a Committee, have been arrested by the Serjeant-at-Arms, upon the warrant of the Speaker, and have been required to apologise before being released. If attendance should be very lax, or a matter of great importance is about to be discussed, respecting which it is thought proper that every member should bear part of the responsibility of deciding upon it, any member may move for a call of the House. A week or ten days must intervene between the order being made to call the House over, and the day upon which the call is made, and upon that day the order is read, and acted on or not, as the House may choose. The counties are first called, in alphabetical order, and then the boroughs; the members have to answer as they are called, and if they fail to attend, they may be summoned by the Speaker. A call of the House, however, is now seldom ordered, because the attendance in Parliament is generally good, and because, although members may be compelled to attend, they cannot be compelled to vote.

When the question is put to the vote by the Lord Chancellor, the Peers do not say "Aye" and "No," as do the Commons, but "Content" and "Not content." Peers do not address the Lord Chancellor as members of the Lower House address the Speaker; Peers commence their remarks with the words, "My lords," and refer to the House as "Your lordships;" Members of the House of Commons, however, always address the Chair, as it is termed, commencing with the words "Mr. Speaker." The House of Lords may transact business when only three Peers are present, nor is it necessary that one of these should be the Lord Chancellor; but the House of Commons is governed by certain rules which place it in the power of any single member to ensure that business shall not be transacted unless forty members are present. At the commencement of every sitting, prayers are said by the Speaker's Chaplain, at a quarter to four o'clock, upon Mondays, Tuesdays, Thursdays, and Fridays, and at a quarter to twelve on Wednesdays, and during this ceremony the Speaker sits in the Clerk's

chair at the table. If, when prayers are over, there are not forty members present, the Speaker does not take the chair; but no member is permitted to leave the House until four o'clock, unless a House is made by the attendance of forty members. If at four o'clock, the Speaker counts the members present, and finds they do not number forty, he declares that there is "No House," and the House stands adjourned until the next day. As soon as he finds there are forty present, he takes the chair, and the House being made by his doing so, business may be proceeded with. Those present are no longer detained, and it sometimes happens that almost the whole of the forty withdraw immediately the House is made. If, during the sitting, there is a very scanty attendance, a member may call the attention of the Speaker to the fact that forty members are not present, upon which business is immediately suspended, the member who was addressing the House resumes his seat, and the sand-glass is turned. Upon the sands having run out, the Speaker rises, and counts those present. If he can count forty, including himself, he resumes his seat, and business is proceeded with; if not, he leaves the chair, and the House stands adjourned until the next day, upon which the House would ordinarily sit. Upon a Wednesday the House cannot be counted out, after it is once made, no matter how few members may be present, until four o'clock, when it may be counted as upon other days. If the attention of the Chairman of Committee is called to the fact that forty members are not present, he cannot count himself, but must send for the Speaker, who proceeds to count in the ordinary way. It has happened upon some occasions that a member, vexed that so little interest is felt in the subject upon which he was addressing the House, has complained of the smallness of the attendance; by so doing, he called the attention of the Speaker to the fact that there was "No House," whereupon the Speaker counted, and finding less than forty members present, left the chair. In this way a member may put an end to his own speech, without intending it. Sometimes, too, the House may divide when less than forty members are present, and this also will put an end to the sitting. In cases where a member thinks the number of members present, although above forty, is not sufficient to transact business of the importance of that under discussion at the time he may move the adjournment of the House or the adjournment of the debate, or if in committee he may move that the Chairman report progress or that the Chairman leave the chair. The effect of this last motion would be to put an end to the Bill. These motions take precedence of all others, and must be disposed of before the business is proceeded with. It is a rule of the House that the same motion cannot be made twice in succession, so that it is customary to vary these motions when the object is to tire out those who are

pressing forward business at an inopportune hour ; but the motion that the House do *now* adjourn may be repeated any number of times in succession, because by the use of the word "now" it is obviously a different motion from that made even a moment before. Motions when once made become the property of the House, and cannot be withdrawn except by leave of the House. This rule is made that the House may retain the power of expressing its opinion upon any motion submitted to it, and not allow that to be withdrawn which it wishes to approve or condemn. If upon any division in the House of Commons the numbers should prove to be equal, the Speaker may give a casting vote, but he usually gives his vote with the Noes on the principle that it would be better to reconsider the matter than that his single vote should decide the point. The Chairman in Committees of the House of Commons also has a casting vote ; but in the House of Lords if the numbers are equal, the motion, whatever it may be, is lost, for neither the Lord Chancellor nor the Chairman of Committees has a casting vote.

Peers have the privilege of entering their protest upon the journals of the House against any resolution which may be come to by the majority contrary to their opinion ; and they may state their reasons for protesting. Members of the House of Commons, however, have no such power.

Peers who do not wish to vote upon a question may stand behind the Woolsack when the question is put ; they are then not in the House, and may refrain from voting. Members of the House of Commons, however, who do not wish to vote must leave the House before the question is put a second time and while the sand-glass is running ; otherwise the doors will be locked, and the orders of the House will require that they pass through one of the division lobbies.

The Lords do not sit upon Wednesdays as a rule, nor does either House sit upon Saturdays, but on very extraordinary occasions they have been known to sit even on a Sunday.

TAXES AND REDRESS OF GRIEVANCES.

Very little reasoning is necessary to show that a country cannot be governed without cost. To maintain all the officers of State, great and small, the Army and the Navy, and the officers of justice, must cost a great deal of money. It costs no less than seventy million pounds each year ; and it will require very little reflection to see that almost the whole cost arises from the fact that people will not do that which is right. The Post Office does not cost the Crown anything : the postmen and telegraph boys are paid out of the fees for carrying letters and telegrams, and a large profit is left from their earnings after they are paid ; but the Army and Navy, the policemen, judges, and jailors cost a very large sum every year ; and the Crown cannot do without them as

long as wrong is done. An army and a navy are necessary as long as other countries make war on one another, and may make war on us; a police force is necessary as long as thieves steal and murderers kill; judges are necessary as long as offenders have to be tried, or disputes have to be settled; and jails and jailors are necessary as long as there are criminals to be punished. All these institutions are established and maintained for our protection, and we pay for their maintenance by means of taxes. Taxes, indeed, may be regarded as the sum people pay for the protection afforded them by the State. As it is the people who pay the taxes, the representatives of the people in the House of Commons reserve to themselves the exclusive right to originate "Money Bills" for taxing the people. The House of Lords sometimes rejects a Money Bill agreed to by the Commons, but never amends such a Bill. If it did so, the Commons would assert their privilege in this matter, and decline to assent to the amendment. So also if the House of Lords passed a Bill of its own, imposing taxes on the people, the House of Commons would assuredly reject it, no matter how good it was.

The first step towards taxing the people is made by the several departments of State presenting their Bills in the shape of "Estimates" for the expenditure during the approaching year. Upon the first convenient day after the assembly of Parliament, the Secretary for War, if he should happen to be a member of the House of Commons, and if not, the Under-Secretary for War proposes that the Speaker leave the chair, in order that the House may go into Committee of Supply to consider the Army Estimates. When in Committee, he makes a statement showing what has been done with respect to the Army during the year that is about to close, what he proposes to do in the year to come, how many men he requires to keep up the standing Army, how much money he will require for their pay, their clothing, their victualling, their arms, and their barracks. At the close of his statement he moves that the number of men he has specified be voted for the use of Her Majesty, and upon that motion any member is at liberty to speak and criticise his plans and all that he has said about the Army, and, if he please, to move an amendment. It is customary, but by no means obligatory, to fix the number of men at the close of the discussion, and after that to agree to a motion for their pay. Upon another convenient occasion the First Lord of the Admiralty will bring in his Estimate for the year, and he will proceed in the same way as the Secretary of State for War. He will state how much money he wants for the building of ships, how many men he will want to man the Navy, and how much money he will require to pay them. His statement may thereafter be subjected to criticism and his proposals to amendment. To make these demands upon the public

more clear, complete statements are presented to every member of the House of Commons, showing for what the money is wanted in every particular, in the same way as an invoice is presented by a tradesman for goods delivered. These are called the Army Estimates in the one case, and the Navy Estimates in the other. Similar statements are presented, showing what money is required, and how it is proposed to appropriate it for carrying on the Government. These are called the Civil Service Estimates as opposed to the warlike, and include the cost of collecting the taxes, the payment of judges and magistrates, the maintenance of prisoners, the contribution made by the State towards educating the people, the cost of the Post Office and Telegraphic Service, and any other expenses incurred by the State other than those incurred in connection with the Army and Navy.

These estimates of expenditure having all been laid before Parliament, the next step is to consider in what manner the money for meeting them shall be provided. The Chancellor of the Exchequer is the Officer of State who makes proposals on this head, and his annual statement, summing up the whole of the expenditure of the country, and showing what taxes the Government proposes to levy, in order to provide the money to meet the proposed expenditure, is called "The Budget." His statement is made in Committee of the whole House, because it has to do with finance, and the Committee is called a Committee of Ways and Means. In the first place the Chancellor of the Exchequer has to describe how the account stands for the past year, and to show whether the taxes have yielded as much as was expected. If they have not done so, and if the expenditure has been greater than the amount the taxes have produced, the Chancellor of the Exchequer will have to provide for the deficit, as well as for the year's expenditure. If, however, the taxes have produced more than is required, the balance remaining, after everything has been paid, does not go to pay for the succeeding year's expenditure, but is used to reduce the National Debt. This debt is made up of sums borrowed by the State in times past, to enable the country to carry on war, and amounts to nearly £800,000,000 sterling. The money is lent by subjects to the State, in sums of £100, and for each £100 the lender receives a bond, certifying that the State is indebted to him in that amount, and promising that he shall receive £8 each year as interest for the loan. Any person may become the possessor of one of these bonds who has the means, for they are bought and sold daily on the exchange, under the name of Consols or Consolidated Stock, and they are much valued on account of their being a very secure investment. As it is impossible to pay off so large a debt quickly, the Chancellor of the Exchequer has each year to provide the money for paying the interest, which, at three per cent. per annum on

£800,000,000, would amount to £24,000,000. He would next name the cost to which the country would be put on account of Civil charges, which would include the salary of all Officers of State, and their subordinates, the State contributions towards the police, and the maintenance of prisons, the payment of the judges and magistrates, the grant for education, the sum granted to the Sovereign in lieu of hereditary rights, as described in the chapter on "The Crown," and the total cost of the Post Office and Telegraphic system. This would, probably, amount to about £10,000,000. Next, he would state the cost of collecting the taxes, which would amount to about £5,000,000, and then he would remind the Committee that the Secretary of State for War had asked for some £15,000,000 for the Army, and the First Lord of the Admiralty required £10,000,000 for the Navy. Altogether, this would amount to £64,000,000, which we may look upon as the Bill presented by the Sovereign to the people for carrying on the Government of the country, and protecting life and property.

Having stated the demand, the Chancellor of the Exchequer next states how he proposes to raise the money to meet it.

To begin with, he will estimate how much the taxes imposed during the past year would yield if no alterations were made in them. Let us suppose that he finds they would yield £67,000,000, even if the country did not increase in prosperity, and no more trade was done in the current year than was done in the year that had passed. This would give him £3,000,000 too much, and he might safely assume that this would be the case, because for many years past the trade done by the United Kingdom has increased year by year, and the Revenue of the country, which depends upon trade and the general prosperity of the nation, has also increased. He would estimate that he would receive from Customs' Duties—that is, from the duties levied on goods, or rather luxuries, imported into this country—perhaps £22,000,000; from Excise Duties—that is duties levied on certain manufactures, chiefly for the production of luxuries—say £19,000,000; from stamps, receipt stamps and bill stamps, and stamps upon legal documents of all kinds, perhaps £10,000,000. From taxes—such as Income Tax, assessed according to the amount of a man's income, or the tax for keeping a carriage or a man servant—perhaps £10,000,000. From the Post Office—which includes all the money paid for the delivery of letters and the transmission of telegrams—probably £5,000,000; and from Crown Lands and other miscellaneous sources, £1,000,000. This would make altogether £67,000,000, and the next thing to be considered would be what should be done with the three million which was not wanted. Perhaps he would suggest that the Duty on Sugar should be reduced one penny per pound, that the Duty

on Tea should be reduced, and that the Income Tax should be reduced one penny in the pound. By doing this the Revenue would be reduced, say, £2,500,000, and that would be sufficient, because the Postmaster-General might desire to reduce the postage on letters in certain cases, and because some sources of Revenue might not yield as much as was expected.

At the close of his statement the Chancellor of the Exchequer would move a resolution embodying one part of his proposal, and then it would be competent for any member to criticise his statement and move an amendment to his motion. But, supposing his proposals to be generally approved, they would be agreed to, and afterwards be reported to the House; Bills would be framed to carry them out, and these Bills would be read a first, second, and third time in both Houses before they became law.

Parliament, by passing the money bill proposed by the Chancellor of the Exchequer, would give the Crown authority to collect the taxes, and to the Lords Commissioners of the Treasury to receive them into the Imperial Exchequer or Consolidated Fund; but it would not authorise the Crown by these Bills to appropriate the money so collected. The authority to spend the money is given by a totally different process, and not until every member has had full opportunity of discussing and taking exception to every sum asked for. This is done in Committee of Supply, and occupies much time. We have already seen that the Minister of War ask the House to vote supplies to Her Majesty for the purchase of provisions and stores for the Army, for the building of barracks, for the purchase of clothes, and for the manufacture of arms. His full statement is made at one sitting of the Committee of Supply; at subsequent sittings every item is gone through, and may be closely examined into by any member who chooses. Let us suppose he asks for £50,000 for the manufacture of a new rifle. A member asks what sort of rifle this is that he proposes to spend so much money upon. The Minister gives a description of it; whereupon a member who prefers a different sort of rifle objects to his proposal and opposes the grant. Then a discussion ensues, in which every member is at liberty to join and to speak as many times as he chooses upon the merits of the rifles, and, perhaps, others may suggest other descriptions. The discussion may last many hours, and may end in the grant being refused or the consideration of it being postponed. Upon another occasion the First Lord of the Admiralty may ask for supply, and he may ask for a sum of money for building ships. His request may be met by opposition, and a long debate may arise before it is granted, while in other cases large sums may be voted without a word, because no one sees any ground for objecting to them. Perhaps the

Postmaster-General may, upon the same evening, ask for some money to pay for the carriage of letters. The Vice-President of the Committee of Council on Education may ask for some portion of the grant for carrying on public elementary schools; and the Secretary to the Treasury may ask for sums to pay the civil servants. When all the sums of money required by the Government have been discussed and voted or not, as the case may be, the Secretary to the Treasury brings in a Bill, which is called the Appropriation Bill, and in this Bill it is provided that all the sums which have been voted in Committee of supply shall be appropriated to the several purposes for which they were voted. This Bill is read a first, second, and third time, in the same way as any other Bill, and having been sent up to the House of Lords, it is then passed through the several stages, and goes forward for the Royal Assent. This Bill, when it becomes law, gives authority to the Crown to spend the money collected in the shape of taxes; and it will not be legal for the Ministers of State to spend the money in any other way. If they do not spend all the money voted upon one account they may not spend it upon another; if, for instance, they do not require to spend the £50,000 voted for rifles upon rifles they may not spend the surplus upon barracks or the building of ships. The money not spent is saved and must be used for the reduction of the National Debt.

But members of the House of Commons have not only the right to object to the expenditure of certain items; they may oppose the granting of supplies altogether, until all grievances are redressed, and all necessary measures are passed for the good government of the people, that is to say, when a Minister of the Crown moves "that the Speaker do now leave the chair," in order that the House may go into Committee of Supply, any member who chooses may rise in his place and object on the ground that his constituency, or the people, generally, are suffering from a wrong which he thinks the Crown should be made to redress before any money is granted for carrying on the government of the country. This is done very often, and although it seldom happens in these days that supply is absolutely refused, the power of absolute refusal is possessed by the House, and may be exercised. Of course no single member could stop the granting of supply by his voice alone; he must induce a majority of those present at the time to support him on a division, or else he cannot attain his end. Generally speaking, members are content with stating their grievance; and others withdraw their motions on receiving a promise from a Minister that the matters to which they have called attention will be enquired into. In this way it will be seen the people possess great power over the Crown. No grievance of magnitude could remain unredressed, if supplies were refused as long as it existed, and, although the extreme measure of absolute refusal has not

been exercised for many years past, the spirit which might at any time develope into such a position, is always at work in Parliament, and being exercised temperately, uniformly tends to good government.

Demands for enquiry are very frequent in both Houses of Parliament. Sometimes members ask for a Royal Commission; sometimes for a Select Committee. These two forms of enquiry differ in character, but they differ rather in form than in result. The members of a Royal Commission are nominated by the Crown, and are generally composed of those most qualified to form an opinion on the subject to be enquired into, whether they be members of Parliament or not; a Select Committee is composed of members of that House of Parliament in which the motion for its appointment is made. The appointment of a Select Committee is quite within the powers of either House of Parliament; the Lords may depute some of their number to consider and report upon any question, the Commons may do the same; and each House may give the Committee so appointed extraordinary powers, to send for witnesses and documents, and compel attendance. The appointment of a Royal Commission is not within the power of either House. The House of Commons may resolve to send an address to the Crown, praying Her Majesty to appoint a Royal Commission to enquire into a given subject. The address will in due time be considered by the Cabinet, and, if approved, the Controller of the Household, commanded by Her Majesty, will appear at the Bar of the House, with a message from the Crown, promising to appoint the Commission. In cases where the address for the appointment of a Commission is agreed on by the Lords, the same course would be adopted, except that the reply would be presented by a member of the Government, being a Peer, probably, the Lord Chamberlain. It seldom happens that a request for the appointment of a Royal Commission is not assented to by the Government, but cases occur in which the Lords may desire an enquiry, and in which the Commons may not. In such cases the Government generally advises the Sovereign not to comply with the prayer of the address from the House of Lords, and a reply to that effect is presented in the same way as if it were a favourable reply.

When a Select Committee of the House of Commons has completed its enquiry, it draws up a report which is presented by its Chairman to the Speaker, and when printed, is supplied to every member. It may then be commented upon, and perhaps form the basis for legislation.

The report of a Select Committee of the House of Lords is laid upon the table of the House, as a matter of course, and is thereafter treated in the same way as a report presented to the House of Commons.

The report of a Royal Commission, together with the evidence upon which it may be founded, is usually presented by command of Her

Majesty to both Houses of Parliament, and thereupon becomes fit subject for comment, and perhaps the basis for legislation in the same way as if the evidence had been taken and the report made by a Select Committee of one or other of the Houses of Parliament.

(*To be continued.*)

TRANSFER OF TRADE FROM FRENCH TO BELGIAN PORTS.—The new law with regard to the Mercantile Marine which was promulgated on the 3rd Feb., 1872, has, since it came into force, given rise to numerous complaints. These complaints are likely to become still more numerous when it becomes more evident that the advantages given by the Act to certain shipbuilders or owners, does not make amends for the injury which is done to consumers and producers at large, by the scarcity and increased price of raw materials and commodities of all kinds hitherto imported into France in foreign vessels. Already grave apprehensions are felt in the ports of Dunkirk, Gravelines, Calais, Boulogne sur Mer, and along the whole coast of the English Channel at the sight of their empty docks and deserted quays. It is only about three weeks since Deputies from the Departments of the Nord and Pas de Calais called the attention of the President of the Republic and the Minister of Finance to the serious condition of affairs. It has been demonstrated to the Chief of the Executive that the putting in force of the law of the 3rd Feb., before the expiration of the Treaty of Commerce with Belgium, had had the effect of diverting a large number of the vessels freighted for the ports of the Channel to Antwerp. As vessels bound for Antwerp are exempt from the surcharge of 7 fr. 50 c., 15 fr., and 20 fr. (according to the port of departure), which, by Act 1 of the 3rd Feb., 1872, is levied on every ton of goods brought into French ports by foreign vessels, they have naturally abandoned the ports of the Channel. And, besides this, merchandise from Antwerp for France enters the country by the land frontier, and is exempt from all duties in accordance with the treaty of commerce still in force. The law of the 3rd February is, therefore, a dead letter. The consequences are that—1. The State receives none of the statutable dues; 2. For the present our ports are deprived of their revenues; 3. For the future, it is to be feared that the new channels of commerce and navigation will for ever diminish the importance of the national transit. The deputies of the departments of the Nord and Pas de Calais are strenuously continuing to urge the Government to propose to the National Assembly the suspension of this law as regards those ports in the neighbourhood of Antwerp, until May, 1873, when the Belgian treaty expires, and they are unable to believe that the Government will disregard the complaints made by the labouring populations of those coasts.—*Journal des Debats.*

FORSAKEN.

There was sunshine on the sea,
 There was sunshine in my breast,
 When he told his love to me
 And I all my love confessed.
 On the sand my name he traced,
 But the ripples in their play
 Up the shore each other chased,
 Till they washed my name away.

There was sunshine on the heather,
 There was sunshine in my heart,
 As we talked of days together
 Days when we no more should part.
 On the turf my name he printed,
 Printed it with flowers gay ;
 But a breeze, when evening glinted,
 Rose and swept my name away.

Oh ! that I had marked the warning
 Of the zephyr and the sea !
 I had not in tears been mourning
 O'er a lover's perfidy.
 Now I wander, lost, forsaken,
 Night has blotted out my day,
 For my love with him has taken,
 Light and life, and name away.

THE EFFECT OF CERTAIN FAULTS OF VISION ON PAINTING.

UPON this subject, which has never, as far as we are aware, been scientifically investigated before, Mr. Liebreich, Ophthalmic Surgeon at St. Thomas's Hospital, delivered a very interesting lecture, at the Royal Institution, on the 8th of March.

We are all familiar with the effect upon painting or drawing of certain forms of disease of the eye. When the works of an artist, whom we have known for years as remarkable for his minuteness of drawing and clearness of outline, suddenly or gradually become blurred and obscure, we do not hesitate to ascribe the failure of power not only to the hand but to the eye. We are not surprised to hear that a clever draughtsman, whose designs are wanting in half lights, has only one optic, and it is difficult to account for such constant and long-continued preference for vulgar colours as the refined Charles Leslie showed, without a suspicion of some organic defect; but science has hitherto left this fertile field of exploration unbroken.

It would be too much to expect that the views expressed in Mr. Liebreich's lecture would meet with unanimous acceptance, but dealing, as it does, with a subject both new and important, and dealing with it in an admirable spirit, at once searching as regards Science, and reverent as regards Art, it is worthy of the most serious attention both from artists and men of science; not to mention the general educated public, to whom it should be peculiarly interesting, as specially affecting two of England's greatest artists.

One of these artists is Turner. Mr. Liebreich, on his arrival in England, was naturally struck with the difference between the pictures in Turner's earlier and later styles, and asked himself the question, "Was the great change which made the painter of 'Crossing the Brook,' afterwards produce such pictures as 'Shade and Darkness,' caused by an ocular or cerebral disturbance?" and he determined to investigate the matter from a purely scientific point of view.

We will give the result in his own words:—

I chose for this purpose, pictures belonging to the middle of the period which I consider pathological—*i.e.*, not quite healthy—and analyzed them in all their details, with regard to colour, drawing, and distribution of light and shade.

It was particularly important to ascertain if the anomaly of the whole picture could be deduced from a regularly recurring fault in its details. This fault is a vertical streakiness, which is caused by every illuminated point having been changed into a vertical line. The elongation is, generally speaking, in exact proportion to the brightness of the light—that is to say, the more intense the light which diffuses itself from the illuminated point in nature, the longer becomes the line which represents it on the picture. Thus, for instance, there proceeds from the sun, in the centre of a picture, a vertical yellow streak, dividing it into two entirely distinct halves, which are not connected by any horizontal line. In

Turner's earlier pictures, the disk of the sun is clearly defined, the light equally radiating to all parts; and even where, through the reflection of water, a vertical streak is produced, there appears, distinctly marked through the vertical streak of light, the line of the horizon, the demarcation of the land in the foreground, and the outline of the waves in a horizontal direction. In the pictures, however, of which I am now speaking, the tracing of any detail is perfectly effaced when it falls in the vertical streak of light. Even less illuminated objects, like houses or figures, form considerably elongated streaks of light. In this manner, therefore, houses that stand near the water, or people in a boat, blend so entirely with the reflection in the water, that the horizontal line of demarcation between house and water or boat and water entirely disappears, and all becomes a conglomeration of vertical lines. Everything that is abnormal in the shape of objects, in the drawing, and even in the colouring of the pictures of this period, can be explained by this vertical diffusion of light.

How and at what time did this anomaly develop itself?

Till the year 1830 all is normal. In 1831 a change in the colouring becomes, for the first time, perceptible, which gives to the works of Turner a peculiar character not found in any other master. Optically this is caused by an increased intensity of the diffused light proceeding from the most illuminated parts of the landscape. This light forms a haze of a bluish colour, which contrasts too much with the surrounding portion in shadow. From the year 1833, this diffusion of light becomes more and more vertical. It gradually increases during the following years. At first it can only be perceived by a careful examination of the picture, but from the year 1839 the regular vertical streaks become apparent to everyone. This increases subsequently to such a degree, that when the pictures are closely examined they appear as if they had been willfully destroyed by vertical strokes of the brush before they were dry, and it is only from a considerable distance that the object and the meaning of the picture can be comprehended. During the last years of Turner's life this peculiarity became so extreme that his pictures can hardly be understood at all.

It is a generally-received opinion that Turner adopted a peculiar manner, that he exaggerated it more and more, and that his last works are the result of a deranged intellect. I am convinced of the incorrectness, I might almost say of the injustice, of this opinion. The word "manner" has a very vague meaning. In general, we understand by it something which has been arbitrarily assumed by the artist. It may be the result of study, of reflection, of a development of principle, or the consequence of a chance observation, of an experiment, or of an occasional success. Nothing of all this applies to what has been called Turner's manner. Nothing in him is arbitrary, assumed, or of set purpose. According to my opinion, his manner is exclusively the result of a change in his eyes, which developed itself during twenty years of his life. *In consequence of it, the aspect of nature gradually changed for him, while he continued in an unconscious, I might almost say in a naive manner, to reproduce what he saw. And here produced it so faithfully and accurately, that he enables us distinctly to recognise the nature of the disease of his eyes, to follow its development step by step, and to prove by an optical contrivance the correctness of our diagnosis.* By the aid of this contrivance we can see nature under the same aspect as he saw and represented it. With the same we can also, as I shall prove to you by an experiment, give to Turner's early pictures the appearance of those of the later period.

After he had reached the age of fifty-five, the crystalline lenses of Turner's eyes became rather dim, and dispersed the light more strongly, and, in consequence, threw a bluish mist over illuminated objects. This is a pathological increase of an

optical effect, the existence of which, even in the normal eye, can be proved by the following experiment. If you look at a picture which hangs between two windows, you will not be able to see it distinctly, as it will be, so to speak, veiled by a greyish haze. But if you hold your hands before your eyes so as to shade them from the light of the windows, the veiling mist disappears, and the picture becomes clearly visible. The disturbing light had been diffused by the refracting media of the eye, and had fallen on the same part of the retina on which the picture was formed. If we examine the eye by an illumination resembling that by means of which Professor Tyndall, in his brilliant experiments, demonstrated to you the imperfect transparency of water, we find that even the clearest and most beautiful eye is not so perfectly transparent as we would suppose. The older we get the more the transparency decreases, especially of the lens. But to produce an effect equal to that visible in Turner's pictures after the year 1831, pathological conditions are required. In the years that followed, as often happens in such cases, a clearly defined opacity was formed in the slight and diffuse dimness of the crystalline lens. In consequence of this, the light was no longer evenly diffused in all directions, but principally dispersed in a vertical direction. *At this period the alteration offers, in the case of a painter, the peculiarity that it only affects the appearance of natural objects, where the light is strong enough to produce this disturbing effect, whilst the light of his painting is too feeble to do so: therefore, the aspect of nature is altered, that of his picture correct.* Only within the last years of Turner's life, the dimness had increased so much that it prevented him from seeing even his pictures correctly. This sufficiently accounts for the strange appearance of his last pictures, without its being necessary to take into account the state of his mind.

We have italicised two paragraphs, because they appear at first sight to involve a contradiction. In the one place, Mr. Liebreich states that Turner faithfully reproduced the changes in the aspect of nature as seen through his disordered eyes, in the other his words might be taken to mean that though he saw nature wrongly he painted her rightly, because his sight, though abnormal for nature, was normal for his picture, and therefore the picture came out right. Thus two doubts would be raised. 1. Whether there is not an actual contradiction in words—viz., whether Mr. Liebreich does not first say that Turner painted wrongly, and, secondly, that he painted rightly; and 2. Whether the fact that his eyesight was normal for his picture, would correct the defect in his sight for nature. For instance, if Turner saw in nature a streak of light descending from the sun's disk, would he have been satisfied in leaving out the streak in his picture? We should say certainly not, if he was unconscious of his defect, which Mr. Liebreich thinks he was. We have no doubt that what Mr. Liebreich means by the "aspect of his picture being correct," is that Turner "correctly" reproduced in his pictures the distortion of nature caused by the defect in his eyes, but he should have made this a little plainer.

Mr. Liebreich then proceeds to tread on more difficult ground, which is at present, we think, beyond the province of science:—

It may seem hazardous to designate a period as diseased, the beginning of which art-critics and connoisseurs have considered as his climax. I do not

think that the two opinions are in decided contradiction to each other. To be physiologically normal is not at all a fundamental condition in art; and we cannot deny the legitimacy of the taste which regards that which is entirely sound and healthy as commonplace, trivial, and uninteresting, and which, on the contrary, is fascinated by that which approaches the border of disease and even goes beyond it.

If that which is entirely sound and healthy is commonplace, trivial, and uninteresting, does it not follow that that which is not commonplace, trivial, and uninteresting must be to a certain extent unsound and unhealthy? Would not all genius be disease if this be true? We have long been familiar with the lines which assert that small are the partitions between "madness" and "wits," but we have always thought that the partitions existed. We should with Mr. Liebreich be unwilling to deny the legitimacy of the taste which was fascinated by that which approaches the border of disease, or even goes beyond it, though we should doubt its healthiness; but whether that which is healthy must be commonplace, is not a question of taste at all.

Not the least interesting part of Mr. Liebreich's lecture were the experiments in which by the application of lenses of different formation he transferred an ordinary tree into a "Turner" tree, and showed the effects of astigmatism (divergence of the shape of the eye from its normal spherical form) upon pictures; but we have not space to do more than add a few lines respecting the other artist, to whom he more particularly alluded—viz., Mulready.

There will be a few of our readers who, from their own misfortune, or that of their friends, have not had the opportunity of looking at nature through a pair of blue or grey spectacles, and have seen for themselves how much of the sun's light and glare immediately disappears, and how all things wear a grey tone. They will, therefore, easily understand how an exactly contrary effect would be produced if, as is always more or less the case in age, the lens of the eye became affected with a yellow tinge. Instead of yellow (as in the case of blue glasses) blue would to a great extent disappear, and nature would lose some of the glory of the cerulean sky and the azure water. At first it might appear that a painter with a yellowed lens might still paint truly; as the view of nature through a yellow lens would require nature's true amount of blue colour to produce a correct copy of it on canvass seen by the same lens, but this is proved to be not the case. To speak unscientifically, there is so much more blue in nature than in pigments, that the amount of blue in nature, absorbed by the yellow in the lens, is imperceptible, compared with the amount of blue absorbed by the same lens in looking at a picture. It results that in order to produce the amount of blue in a picture necessary to satisfy the artist's comparison between his work and nature, he has to overload it with more blue than is present in nature in comparison with other colours; thus the yellower his lens is, the bluer his picture will become.

That the lense of Mulready's eyes were thus affected late in life, Mr. Liebreich proves, as it seems to us, irrefutably. He says:—

It happens that Mulready has painted the same subject twice,—first in 1836, when he was fifty years of age and his lens was in a normal state, and, again, in 1857, when he was seventy-one, and the yellow discoloration had considerably advanced. The first picture was called, when exhibited, "Brother and Sister; or, Pinching the Ear;" the second was called "The Young Brother." In both pictures a girl, whose back only is visible, is carrying a little child. A young peasant, in a blue smock-frock, stands to the right and seizes the ear of the child. The background is formed by a cloudysky and part of a tree. Both pictures are in the Kensington Museum. The identity of the composition makes the difference in the colouring more striking. If we look at the second picture through a yellow glass, the difference between the two almost entirely disappears, as the glass corrects the faults of the picture. The smock-frock of the boy no longer appears of that intense blue which we may see in a lady's silk dress, but never in the smock-frock of a peasant. It changes into the natural tint which we find in the first picture. The purple face of the boy also becomes of a natural colour. The shades on the neck of the girl and the arms of the child, which are painted in a pure blue, look now grey, and so do the blue shadows in the clouds. The grey trunk of the tree becomes brown. Surprising is the effect upon the yellowish green foliage, which, instead of appearing still more yellow, is restored to its natural colour, and shows the same tone of colour as the foliage in the earlier picture. This last fact is most important to prove the correctness of my supposition. My endeavour to explain it became the starting-point of a series of investigations to ascertain the optical qualities of the pigments used in painting, and thus to enable us to recognize them by optical contrivances, when the vision of the naked eye does not suffice to analyze the colours of a picture.

When I had the pleasure of showing this experiment with Mulready's pictures to Professor Tyndall, he drew my attention to the fact that one single colour—namely, the blue of the sky, was not affected by the yellow glass. The blue of the sky was almost the same in both pictures. I could not at once explain the cause of this, but I discovered it afterwards. The fact is, it is impossible to change the sky-blue of the first picture so as to form a colour that looks like it when seen through a yellow glass. If more white is added, the sky becomes too pale; if a deeper blue is used, it becomes too dark. Mulready was thus forced to content himself by giving to the sky in his later pictures the same colour as in the earlier ones.

If we look at Mulready's earlier works through the same yellow glass, they lose considerably in beauty of colouring; the tone appears too weak; the shadows brown; the green, dark and colourless; we see them as he saw them, and understand why he became dissatisfied with them and changed his colouring.

We commenced this article by saying that we thought that the subject had never before been scientifically investigated; we will conclude it by wondering where science, having got thus far into the domain of art, is likely to stop. Perhaps some day no one will be considered properly equipped for the Royal Academy without a box of lenses of different colours, convex, and concave, and a pair of "Donders' sthenopeical spectacles," in order to contrast the effects of colour blindness, yellow lenses, short or near sight, imperfect diffusion of light, and other diseases of the

painters. Perhaps we shall hear such remarks as these, "What a fine painter so-and-so would be if he were not so astigmatic," or "Allowing for his undoubted hypermetropy and the discolouration of his lenses, he is undoubtedly the finest draughtsman and colourist that the world has ever seen." Will science proceed still further and invade the domain of thought as it has that of sight? Will a time arise when a scientific test can be applied to literary work, and we can take our poems to the doctor with the certainty that he will be able to diagnose the exact condition of our brain in some such words as these, "Extremely brilliant! evidently suffering from *Swinburnia*; occasional pathetic passages of a morbid character, not serious—probably the remains of hydrocephalus in infancy!"

FOK'S'LE YARNS
ON BOARD THE "OCEAN WAVE."

By W. F. PEACOCK.

No. 4.—LOST AND FOUND!

WHILE the fok's'le was arranging itself to hear Paddy O'Hara's yarn, our cook, who was a pronounced character, of the name of Nebuchadnezzar Bokam, generally shortened to Mr. Bucky, was busy. Mr. Bucky was a mulatto, born at Sierra Leone; his father (so the story ran) a trading Jew of Mogadore; his mother, an African Princess! I don't exactly know how he came to join Captain Neate and the *Ocean Wave*; but he had made several voyages in her, and the Captain fully appreciated both his eccentricities and his good qualities as cook. Mr. Bucky claimed to have been brought up a Jew, but to have been converted to Christianity; and certain it is that he had read both Old and New Testament from Genesis to Revelation, and knew his Bible much better than anyone on board. Yet, being an excitable, enthusiastic (not to say) fanatical character, Mr. Bucky would sometimes mix up Biblical matters in the strangest style; and his general speech was a compound of Hebrew-English and negro idiom. And whenever, in controversy touching spiritual truths or Bible-facts, he met with a tough or bigoted opponent, his veneration for the subject always caused him to "swear" in its favour! "Vat de teefil!" he would say; "Vhy shtuff yer nonsense down my froat? I have great luv for my Bible, an' you are one big onbelievin' meshumad* (goodness knows where Mr. Bucky had picked up this Hebrew word!) I sall go up to de shtars! You vill go down to Top-pit! (he never could say Tophet); de Chews are de

* Outcast; apostate.

adopted peepils, an' my fader vas a good Chew; an' I'm a Chew alzo, cou-werted! Dere's de promises of Fader Abraham dat I shall be gaddered in, an' dere's de fact dat I am Chreestyen Chew, an' dere's de fact dat I can make better mess dan seven oder cooks out of five! Ax Cap'in Neate!" For Mr. Bucky was not exactly a Cocker or Walkin-game; and occasionally confused his arithmetic, though, indeed, he never hashed a meal.

We were off the Lizard in the second dog-watch (6 to 8 p.m.), and as at this time the greatest number of men are off duty, the fok's'le of the *Ocean Wave* was particularly full. Some of the hands were doing nothing at all; others attending to (what I may call) personal repairs; a few reading some favorite well-thumbed novel by *Marryat* or *Chamier*, and several talking together. Mr. Bucky had looked in and was kindly manipulating the left wrist of Apprentice Phil who was on his first voyage. Phil had offered a spyglass to Mr. Bucky on condition that his arm should be tattooed; and Mr. Bucky was hard at work, producing an anchor which would have compared favourably with that tattooed by Lord Bellew on the wrist of Sir Roger Tichborne. Mr. Bucky's preparations were few and simple. He had three needles set into a deal handle and protruding the eighth of an inch; some Indian ink for the black lines, and some dragon's blood for the red ones.

"An' tank yer shtars, younker!" said he, "dat yer have got me to hornymeant you! Vhy, I've sheen an' known lads to be shpoiled altogeder by cloomsy pretenders! Zis! an' I've known people as hadn't good Indyen eenk an' rag-in-blood like this 'ere, to vork in sich common shtuff as coal dusht an' gunpowder. Now, I takes pains vith yer, an' displays my shkill vithout no porpoise at all but to make yer a Man."

"But I've given you my telescope, Mr. Bokum, you know!"

"Vell, don't I know dat? An' vouldn't yer only shdash it if yer kept it? Vot's the good of a teleshcope to a terrier-farmer-younker? (Whenever Mr. Bucky meant to impress his audience, he employed some tremendous jaw-breaker, and generally made havoc of it as in this case where "terra firma" became, under his pronunciation, a combination of brute and human kind; what I may term a linguistical Centaur!)

"And you promise to explain the bells to me," said young Phil.

"De bellsh!" said Mr. Bucky, as he adroitly applied the needle-brand to the last fluke of his device. "Vell, dat's soon done. Ishn't dere a bell ev'ry half-hour? Den there's only eight bellsh. Vell, 8 bellsh am 12 o'clock, an' 8 bellsh am 4 o'clock, too; 'case dere's eight half-hours in four hours, an' de bellsh begin again at 12, and at 4, and at 8. Von bell, half-arter four; two bellsh, five o'clock; an' so on. Den the dog-vatches—de're on'y two hours each (half as long as de oder vatches, maybe becasse de dog is shaid to shleep vith von eye open!);

an' de fust dog-vatch is from 4 to 6, an' de second (dis here dat ve are in now) is from 6 to 8. An' de helm is relieved, younker, at 4 bellsh and 8 bellsh, dat's two hours for each man, an' de look-outs de same. An' vot's to-night?"

"Wednesday, Mr. Bokam," said Phil.

"No, it isn't! Plesh yer young heart, vy, it's Thursday; 'case, you see, a sea-day, or vat ve call a naughty-gal day, ends at meridyen, 12 o'clock, ven ship matters is made up, an' oder tings. Dere! I've given yer shum vallyable larning, an' de anker is finished, though, maybe, we'll look how it is to-morrow. Don't yer go an' rub it if it shmarts! Dere's noting dat's got in dis yer world dat's vurth having without terrubble or pain; an' dat's a bu-tiful 'deck-oration,' dat is!" (With which modest testimony to his abilities, Mr. Bucky put his materials together and composed himself to listen to the yarn which Paddy O'Hara had just commenced; while young Phil curiously turned over and over a bit of dried seaweed which his colored protector had given him, one of those oblong morsels, with horns extending not altogether unlike a split bat, and which are known amongst sailors as devil's aprons).

"An' faith!" said Paddy, "it's mesilf will spin ye a yarn that shall kape ye as attintive as *ales* whin the fryin'-pan is a-gittin' hot to resave 'em aloive! Be Saint Dunstan, an' sure! wasn't it him as took the consait out av Ould Nick? Ye'll foind it as interestin' as plum-duff to a raw spalpeen or the forst letther a boordin'-school miss gits from her swateheart; but, howsomdivver, I'll not kape ye longer in suspinse (as the hangman said to the murdherer), for I'll break the shill av me story an' give ye the kornnel!

"Tin years agone I wur in the brig *Josephine*, thradin' betwixt Leeverpool an' Bombay. On our return voyage we met wid conthrairy winds, an' wur fain to bate about out av our coorse. Some av our wather-casks started, an' we ran short, an' had to be half 'lowanced. Our Captain, undher the sarcumstances detarmined to ray-plinish, an' bein' then off the Andamans—ye'll see how we'd baten about to be *there*—sint a boat's crew to land, jist on the chance av findin' wather; case, ye see, thim oilands are more disert sand than *hoses*." (Had Paddy been a fireman he could not have used a more appropriate term, though he meant, in all probability, to say "*oases*.") An' divils av places they are, be gor! The best av 'em little betther nor a dust-hape, wheer the sun comes down hot and shtrong like a slave-dhriver on a ray-fractory nigger. Mother o' Moses! that's bad enough inyhow, but there's 'worrse things behinte,' as the Divil said when he showed his front-parlour! For, ye see, the natives av thim oilands—manin' the Andamans—is a moighty tricherous lot, an' as cute as the monkey that used the cat's fingers to git the chasenuts out av the foire! An' they've

no more 'bringin' up' than Larry Ryan's pig; an', taken altogether, faix! they're loike the herd o' swine in the Scripthur, after the Divil had gone into thim!"

"I know them Andamans," put in Sheky Jenkins. "You're right, Paddy!"

"Bully for you!" sung out Zachariah Burge; "It's where the Eu-ropean Government sent that thundering King of Delhi; there's a convict settlement there, I guess."

"Totted up corriect," said Paddy. "An' the Quane's diputy—all honour to him, for he's a dacent gintleman, is Lord Mayo"—(How little thought honest Paddy that the able Viceroy of India would meet his death on the very spot!)—goos there now an' thin to inspiect the prisoners an' see that all's straight an' taut. But plase don't take the helm out av me hands till ye relave me wid a yarn av yer own, 'case it puts a fellow a point off.

"Lit's see! Well, as I were sayin', we landed (five of us) lavin' the others in the boat, an' wint some distance up 'prospiectin,' as Zacoby would say; but divil a dhrap av wather could we foind ontill we came to some brushwood, when we saw a tidy little strame just beyont. Tom Porgle were rayther in advance, an' he'd just shouted, 'It's here, lads!' whin up starts forty or fifty clay-headed naked savages from the brush, an' throwed their spares at us right an' lift! An' the onbaptised barbareens yelled like so many dhrunken omadhauns, and came on like mad!

"Now, we'd left our arms in the boat, an' inyhow it didn't matther, 'case, ye see, we couldn't spake their lingo, and they couldn't spake ours; so we couldn't git the scramin' witches to hould their pace, an', as they gave us no time to think, an', as it were a matther of *cut*, or 'kill a few an' be killed,' we retraited in as good ordher as possible; so there was an ind to the wather!

"Well, we put off while the divils danced on the shore like ugly dhirty grinnin' fiends, pitchin' their spares when they thought they could hit us, an' brandishin' their clubs like them go-rillas I've heerd on.

"Wurst of all, a sea-fog fell, an' we missed the brig; an' thin a gale came on, an' we'd hard work to kape the boat above wather; an' the gale lasted all that night. Whin mornin' broke an' it cleared, we could make nayther ship nor sail!

"We'd a thrife av biskit an' some pork, an' we'd a few gallons av wather; an' there we were adrift in the Indyen Oshun wid niver a guess where the *Josephine* could be!

"For days and nights we pulled by the sun an' stars; there was niver a compass wid us; an', at last, we were as hard set as men could be, the provishuns an' wather all gone.

“ I'll not attempt to tell ye our shifts, or what we suffered. There's men among ye have, maybe, exparinsed somethin' av it. But we clung to hope an' cheered aich other up. At last—there were no help for it—we drew death” (cast lots who should die). “ British sailors don't give in ontill it's ‘hard junk an' onaitable,’ an' we'd been five days widout bit or dthrop. Tom Porgle, poor fellow, proposed it, an', mayhap, he'd a rale intherest in his life ; for he'd saved money, an' it were in the Bank at Edinburgh, an' he'd tould us about it long afore. Tom, ye see, was a thoughtful kind of a chap, an' he'd got his will made the voyage before, an' he niver would lave it wid the lawyers, but carried it about wid him. He'd showed it to us in the *Josephine*, an' it were writ on reg'lar shape-skin—parruchment, as folks say—an' he kept it in a rat's-skin pouch as he'd tanned an' made hissif.

“ Ye think, whin we drawed the sivin bits av stick—one longer than the others, which were death !—as the lot fell on Tom. No, it didn't ! He were spared, that time.

“ Bill Hanson wur the man ! Well, mates, it's thryin' to talk av ; I could cry like a child whin I think av how he died, manly, and shakin' hands all round, though, God knows, we wur so wake an' rayduced that we could scarcely lift ourselves.

“ Well, we made shift for sixteen days more, catchin' a little wather whinever there were a shower. Then some of us proposed another draw, but agreed to wait ontill next day. No sails, no land, no food, no dhrink but salt wather, an' we darns't dhrink that ! When next mornin' come, says Jem Bloss, ‘ It's as good as a dhrink to have a bathe ; salt wather gets through the skin ; ’ an' he made shift to crawl over the boat's side. Three more follored him, with their clothes on, holdin' on to the boat. The others were too wake ; lyin' along the bottom, more dead nor alive. Tom Porgle was one av the bathers. Well, my poor mates wur gittin' in again—an' it took 'em a power av time to do it—whin Tom give a shriek, and wint undher like a shot ; and next moment we knew that a shark had seized him, for the say crimsoned up blood where he had bin a minit afore !

“ Poor Tom ! I shall niver forgit the horrid expression av his eye as he went undher ! If iver ye've, any av ye's, seen a man taken down by one av those *say-divils*, it's past relatin'. It's not the fear av death ; it's the manes an' manner !

“ So there wur an ind av Tom an' the will too ; but I don't think that entered any av' our minds *thin*, 'case we were calkilatin' more for the livin' nor the dead—what to do, an' what would become of us. Very same afternoon, mates, not an hour after, another man had died av sheer exhaustion—it wur Abram Meredith, a Welshman ; an' whin we wur, in our *fable* way (bein' worn to skinn an' bone), debat'in' whither

we should vinture on tastin' him, Jem Bloss sings out like mad, 'There's a sail!'

"An' sure enough there was; an' prisintly she hove in sight distinct, and she saw us. So we wur picked up, an' well cared for, an' only one died afterwards; an' the *Golden Cross* landed us at Batavia, where she wur bound. One av the officers told us that they had spoken the *Josephine*, off the Cape, an' heerd av our boat bein' lost, though they never thought it wur our boat when they picked us up.

"Well, mates, to cut my yarn, we as wur saved got sthrong, an' prisintly shipped in different vissils. I hailed for London in a Dutchman, the *Frau Baboose*.

"When I got there, I slung my hammock at Poll Cartney's; her house is in the Highway, but it's respecttable, an, that's more nor can be said av many av 'em in 'Radcliffe.' Second night, jist afore goin' to bed, a black sailor came in, an' as he samed a hin-tilligent sort av feller, we talked a bit while Poll got him some grub ready.

"Aftther supper, 'Now,' says he—an' his English were surprisoin' good, but, though a nigger, he'd been a dale amang sailors—'let's have a blow!' an' out comes his *poipe*; a riglar African, cut stone an' carved reelly 'splendiferous,' an' colored red-an'-black.

"'Got any plug,'" says I, manin' to hand Sambo some.

"'Lots,' says Sambo; 'you try some of mine,' and he tossed over his pouch.

"As thrue as you live, the nigger tossed over poor Tom Porgle's pouch av rat skin! If iver a feller wur scared, it wur *me!* The room swum round, an' I thought the Divil were in it. Tom Porgle's idintical pouch! I carried on like a crasy cow for iver so long, until Poll Cartney brought me to wid a back-hander; shure! she's a jewel is Poll, wid a heart as light as her fist is heavy, an' faith! she's pritty liberal in givin' both! So at last I wur able to obtain a dacent ixplanashun av the mysthery."

"Pay out, Paddy!" said Bob Harris. "Let's know how the nigger came by the pouch."

"Be me sowl, 'twould bother ye to guess," said O'Hara. "Ye see, sharks move about from place to place, like bad tenants! Some av 'em, I know, lo-cate (as Zachy says) in pertikler wathers, an' some av 'em can be considerably taught-like,—look at that ould Jamaiky divil, 'Port Royal Jack,' as cruised atween the ship an' the shore, an' wur as good as a cintary to privint disirthers, or sailors takin' lave widout axin,—but there's sharks as 'll be in one Oshun *this* year, an' thousands o' miles away nixt, purwidin' the latitude suits 'em. Well, mates, this heer nigger had bin bum-boatin'-like off Bonny (ye know the Bight av Benin), an' he wur dixerus in the wather, an' could swim inyway; an' it wur quite fun wid him to foight the sharks single-handed, barrin' his knoife. One mornin' he seed a big one, an' made for it. Ingagin' it in front,—

al'ays matin' the divil face to face, but divin' whin it turned to snap at him, he'd 'come up onder' an' plunge his knoife into him, an' thin swim round by its tail to its head, while the shark wur all abroad an' in a con-dishun of appleplex. (Paddy in all probability meant "perplexity;" or, indeed, it might be "apoplexy," he intended, though I never knew a shark to suffer from the latter complaint.) An' so he'd repate the operashun until the divil floated over. He'd killed this heer big one an' towed it ashore, whin the thought come to him to open it, an' so he did. But all he could find in the divil wor some *say*-boots, an' what looked like tarp'lin throusers, loikewise a sou'wester. In the trouser-pocket wur somethin' bulgy, and whin he come to overhaul it, he found it wur the rat-skin pouch. An' in the pouch he found a folded paper.

"I axed him what it wur. He said he didn't know, 'case he couldn't rade, but he'd kipt it, balaivin' it moight be a charrum."

"Fetish, I reckon!" quoth Zachariah Burge.

"Maybe," said Paddy. "Well, I axed to see it, an' if he didn't go to his say-chist in Poll Cartney's, an' come back with the identical will! I tould the nigger *part* of the sarcumstances, an' made him balave that the parruchment wur only a letther of poor Tom's, an' as Tom an' me had bin sich frinds, I said I should loike to have it as a kapesake, bein' no good to him; an' so, ather wettin' the nigger, I swapped my knoife wid him for the will. Now I'd drawed money in London, an' havin' toime to spare, I made a sort av pleasure-run to Leith, an' walked over to Edinburgh. It wur moighty hard work to me to foind poor Tom's son in that big cithy, for d'ye see, I wouldn't thrust meself to ax lawyers; but at last I sighted him, an' hove to in his master's shop. The young man wur flabbergasted, an' no misthake!

"I made over the will to him, an' though I'd as lave face a shark as a lawyer, wint wid him an' made what they call a 'davit—but it's not like ours on board ship—an' he proved the dockymint, and got the money paid over. I lit him pay back my expinses, but no more, 'case, ye see, he wur poor Tom's son, an' Tom had bin my ould frind an' shipmate.

"I'd loike to have had that rat-skin pouch, but the nigger wouldn't trade it, though I tried him hard. Besides having been made by Tom, it wur right down cu'rous; iviry part a'most of the hanimal presarved: ears, *fate*, tail; wid *bades* for the *oies*, an' some av the 'whany-twany' whoite *taath* nately stitched in."

"It's a wonder some of them Lunnon tobaccynists don't make an' sell such; they'd be pop'lar," said Joe Harbridge.

"Faix, an' ye're roight!" said Paddy. "But what does a landsman know in com-parishun wid a salt?"

"An' was that all that remained of Tom Porgle?" enquired Rufe.

"Barrin' his say-boots and sou'-wester!" said Paddy; "Be the powars! ivirything ilse wor *di-gested*!"

ON OATHS.

A HISTORY of oaths, in its full extent, would range over the whole known period of the world's existence, from the time of the children of Israel downwards. Those who have treated of this subject go back to Abraham, Isaac and Jacob for the earliest examples of oath taking; while even the habit of rash and profane swearing, for which our countrymen are said to be remarkable, is traced by more than one eminent authority to the patriarch Joseph, who, in the course of conversation with his brethren, twice within the limits of one sentence, makes use of the expression, "by the life of Pharaoh." As the same authorities state, in extenuation, that the patriarch had lived a long time at the Egyptian court, and may have contracted the habit from the society in which he moved, this objectionable practice may be assumed to be of considerable antiquity. Even with regard to some of the oaths in use in our own country, the history would reach back to the earliest period of our annals, and would come down to the present time. The history would scarcely be a pleasant one, for in many of its chapters it would be a story of the grossest bigotry and oppression, and in others a picture of superstition. At the same time it would well illustrate the manner in which men's notions concerning the relation of the unseen to the visible would have been modified with the advance of civilization.

The habit of exacting an oath as a guarantee that the person taking it will do or not do any act, has its roots in a period when the action of the spiritual powers upon the every day affairs of life, was held to be direct and incessant, to a degree which at present we can scarcely realize. In an age of miracles, when the imagination filled the world with unseen beings of supernatural power, banded together for the destruction, or for the succour of mankind, it would seem nothing wonderful for a person to make a solemn promise in the presence of his Maker, and to expect a swift and sure punishment if he broke his word, no matter how trivial the subject might be; while the difficulty of carrying out an investigation in early times, and the weakness of the law, as compared with the strength of those who were nominally subject to it, made it highly convenient to be able to constrain men's consciences, when their bodies could not be coerced. Conditions of this kind explain the existence of many oaths in the early period of their history. Take, for example, the "Oath and Abjuration of Thieves." This was administered at the church door to a robber, murderer, or other felon, who had fled into a church, upon confession of felony. The oath begins with this candid avowal:—"This hear thou, Sir Coroner, that I am a robber of sheep, or of any other beast, or a murderer of one or more, and a felon of our Lord the King of England." Then, after stating that he has done many such

evils in the land, the juror abjures the realm, and promises to hasten to a port, and to do his best to get a passage, undertaking, if unsuccessful, to go every day into the sea up to his knees, assaying to pass over. Those who imposed this oath must have relied, with more certainty than we can, upon the belief in the mind of the juror that if he broke his engagement he would be punished by some supernatural power, and they might calculate, with some confidence, that the course of a man's actions would be determined by his oath, even against his inclinations.

To the same state of feeling may be traced the "Oath of the Champion." The difficulty of determining a disputed claim to the possession of land made it convenient to try the question by a combat between the champion of the man in possession, and of the claimant, more particularly when men could, with confidence, hope "that God would give victory to him that right had, and of whose party the victory fell out." The words of the oath were, "This hear, ye judges, that I have this day neither eate, drunke, nor have upon me either bone, stone, ne grasse, nor any inchantment, where through the power of the Word of God might be inleasd (*i.e.*, entangled) or diminished, and the Devil's power increased, and that my appeale is true, so help me God and his saints, and by this booke." After the oath the combat was begun, but it does not seem to have been particularly dangerous, "for their weapons were but batons," nor were the champions bound to fight "but until the stares appeare." After the battle, victory was proclaimed, and the vanquished champion acknowledged his fault in the audience of the people, or pronounced "The horrible word, Cravent," and thereupon judgment was given, and the recreant lost all his rights as a free man.

In these early times an oath was a sufficient constraint of itself, without any terrors beyond what the imagination supplied. In judicial proceedings it is true that the penalties of perjury attached to a wilful breaking of an oath, but to the two other classes into which oaths are usually divided, political oaths and promissory oaths, or oaths of office, no material punishment was affixed. But if we take up the history of oaths at a later period, we find a great change in their nature and object. Instead of being a simple declaration of duty, and relying for their sanction upon the credulity of the juror, they became after the Reformation, in many cases, political or religious tests, and a penalty was attached, not to the neglect to observe them, but to the refusal to take them. The first that was employed in this manner was the oath of allegiance. This is the oldest of our existing oaths, having its origin, we are told, in the days of King Arthur. It was revived in the days of King Edgar, and in early times it was, or ought to have been, administered publicly to every male above the age of twelve years in the *tourne* or the Court Leet. Its primitive form was:—"I will be true and

faithful to the King and his heirs, and truth and faith bear of life and limb and terrene honour, and will not know or hear of any ill or damage intended him without defending him therefrom." In accordance with the spirit of the times it was a simple declaration of the duty of allegiance which every subject owed to the King. The breach of the duty constituted the crime of high treason, but no special penalty was attached to a breach or refusal of the oath. In the time of King Henry VIII., an attempt was made to settle the succession to the crown upon the issue of the King's marriage with his Queen Anne, and an Act was passed with that object in the year 1533 which enacted that all persons should be sworn to keep its contents. This was upset three years afterwards by another Act which, after stating that the King's marriage with Queen Anne was utterly void, makes a fresh settlement of the crown upon the issue of the King's marriage with Queen Jane, and imposes an oath of faith, truth, and obedience to the King and his heirs by this marriage. Refusal to take this oath was constituted high treason, and brought with it liability to suffer death and forfeiture. It may be observed that though the oath thus prescribed was in effect the oath of allegiance, the definite statutory form which is now generally understood by that name was not imposed till a later period. About the same time we find a notice of an oath which illustrates the early history of trades unions. In the year 1536 it is mentioned that "divers, masters, wardens, and fellowships of crafts, caused prentices or young men, immediately after their years were expired, before they were made free of their occupation or fellowship, to be sworn upon the Holy Evangelists that they, nor any of them, after their years or time expired, should not set up or open any shop, house, nor cellar, nor occupy as freemen without the assent and licence of the master warden or fellowships of their occupations upon pain of forfeiting their freedom or other like penalty to the great hurt of such apprentices." Here we have an example of the double aspect which oaths had by this time come to bear—first, an appeal to Heaven to bear witness that a certain course of action would be pursued with a tacit assent to whatever vague and mysterious penalties might be administered from that quarter upon failure of duty; and, secondly, a means of imposing temporal disadvantages upon an obnoxious person. The majority of oaths to which penalties were attached were those employed as political tests, and the punishment was inflicted for refusal to take them. When the oath was merely one of fidelity in discharge of duties, a refusal to take it was hardly to be anticipated, and the penalty for non-observance was, as a rule, left to the discretion of Heaven.

(To be continued.)

SALVAGE EXPENSES.

COMPLAINTS are sometimes made by the owners of wrecked property that the cost of their goods being salvaged and restored to them is excessive and unreasonable. They allege that the charges made for salvage, &c., are so great that it almost becomes a matter of indifference to them after their property has once been wrecked whether it is subsequently salvaged or not, and that from goods that may sell for, say, £100, they think themselves fortunate if they receive as much as £80 or £40 of the proceeds of sale.

It certainly seems rather hard, but then half a loaf is better than no bread. Let us consider what becomes of the proceeds of the sale of wreck in any one instance.

The property has been salvaged either out at sea or else on the coast, and has, perhaps, given the salvor considerable trouble, and he may even have incurred some risk to himself or his vessel on account of it. It has then been reported or delivered up by him to the Receiver of Wreck in whose district it was landed or found; and with that the salvor's connection with it ends, except, of course, receiving the remuneration due to him for his services. The Receiver of Wreck then takes charge of it, and has it removed to his warehouse or other place of safety. He also enters it in his books, and reports it to the Board of Trade in London and to Lloyd's. We will suppose that it is subsequently sold by him, either before the owner is discovered, if it be likely to deteriorate by keeping, or afterwards at the owner's request, and that it is sold for the sum of £100. Now what will probably become of this amount?

In all probability it will be disposed of in some such proportion as follows:—

To the salvor, or salvors, will be paid about £25.

To incidental expenses, such as labour, cartage, costs of sale, &c., &c., we may allot about £20.

And to the receiver of wreck, his usual commission of five per cent.—viz., £5.

The remaining £50 will be paid to the owner, who will possibly receive it with dissatisfaction. We may be surprised that he should be dissatisfied, but then

“ Kill a man's family and he may brook it;
But keep your hands out of his breeches' pocket,”

is a truth with which we are all more or less conversant. Seriously, however, has he any grounds for complaint? We think not. Taking the charges separately, and beginning with the last, let us see whether they are not perfectly just.

We do not think any owner will complain at having to pay a tax of five per cent. to the Government when he considers what is done by them for the protection of wreck. Besides the Coastguard, who are a very large force, there are 130 Receivers and a still greater number of deputy receivers of wreck, stationed at different ports throughout the United Kingdom. Their duties are often very arduous, are always more or less accompanied by considerable responsibility, and where conflicting interests are concerned, are likely to gain for them the ill-word and ill-feeling of those with whom they have to deal. That so small a fee as five per cent. on the property salvaged should be charged for the services rendered by these officers, no ground of complaint can possibly exist.

With reference to the second charge—viz., incidental expenses, it is evident that such expenses must be incurred, and the only complaint that can possibly be made is that more expense has been incurred than was positively necessary, and that the Receiver of Wreck has not been so careful of the owner's money as he would have been of his own. The Receiver, of course, does not gain by wasting other people's money, and although it may be thought by some that there is a temptation for the Receivers to curry favour amongst their neighbours by paying them too liberally for their services in respect of wreck, still we think in the end they will find honesty the best policy.

With respect to the third charge—viz., the amount paid to the salvor, it should be remembered that this payment may be looked upon in two different lights: firstly, as a sum duly earned by the salvor for his trouble and risk; and, secondly, as a reward to induce salvors to act honestly in respect of wreck salvaged by them.

As you decrease the rate of reward you increase the temptation to wrecking; and, therefore, it is to the interest of the owners themselves that a liberal salvage should in all cases be allowed. It may, however, be stated that the Courts of Admiralty very seldom, if ever, give more than one-half the value of the property saved.

We think, then, it is clear that the owners' interests are well looked after. Of course, special cases will sometimes occur when the expenses will be unusually heavy; as in a case we remember when the cargo of a vessel sold for about £1,300, and the owners only received about £300 of the proceeds, the remaining £1000 having been expended in fees, salvage, and expenses. Such cases, are, however, exceptional, as the owners generally receive more than one-half of the proceeds of the sale of their property.

It will always tend to the owner's interest that he should keep on good terms with the Receiver of Wreck, and should at once comply with his requirements which in the end will generally be found to be perfectly just, and in accordance with the provisions of the Merchant Shipping

Act. If unnecessary expense is incurred owing to the owners refusing to produce satisfactory evidence of ownership, or to lodge substantial security with the Receiver to meet salvage claims, then the owners have only themselves to blame.

JAPANESE ROYAL NAVY MODELLED ON THE BRITISH NAVY.

OUR Special Correspondent at Yedo forwards us the following, which he thinks will interest our readers:—

In 1870 it was decided by the Government (the late Daimios consenting) to form an Imperial Navy, and nearly all those Daimios possessing ships of war, handed their vessels over to the Mikado for that purpose. Whether they were paid for the ships or not I cannot decidedly state, but I believe in most cases they were, for one condition when the ships were handed over was that they should continue to be officered and manned from the class they formerly belonged to, but from this restriction later on the Government released themselves, and, if I am correctly informed, they did so by paying the price of the vessel as each Daimio demanded it.

In the autumn of 1870, the Hiyobusho began to form plans for the organisation of this navy, and many wished the American system to be followed, but feeling was more strongly in favour of the English, and the Government decided to adopt it. Lieutenant Hawes, a young retired officer of the Royal Marines, accepted employment under the Naval Department of Japan in December, 1870, as Gunnery Instructor to the Fleet, but found it impossible to commence his duties then, owing to the disorganised state of everything. It was clearly necessary that some proper system of organisation, routine, and regulations should be established for the *interior* economy of their ships before anything like drill could be commenced, and the Department concurring with Lieutenant Hawes, consented to hand over the *Rin Jho Kan*, a partially armoured corvette, for the purpose of being thoroughly put in order and organised by him exactly as an English man-of-war, and the Lieutenant had authority to make whatever changes he thought necessary.

He found the ship manned and officered by one of the Higo clan, with the exception of the captain. There seemed to be no distinction between officer and man; ward-room, gun-room, cabins, and lower deck all seemed alike, anyone and everyone freely using them. The *Rin Jho Kan* was in a most filthy condition, and in a disorganised state; her decks were covered with dirty stinking mats and Japanese fire boxes; men slept, ate, smoked, and cooked where and when they liked; they

were in a most sickly state. Out of a crew of 280 about 100 were lying about on dirty futons (beds) sick, some had fever, but they were chiefly suffering from cold. No arrangements had been made for food or clothing for them. A small amount of money was allowed for the former, and men bought their own, and to save money, of course, got the cheapest. The armament of the ship was also in a most disgraceful state with rust and dirt, and apparently some of the guns had never been moved, as the deck was a sort of store of Japanese beds and boxes. To commence the work of reformation, Lieutenant Hawes advised the swords to be taken away from the men (nearly every man had one or two swords), the clan to be broken up, and the ship officered and manned from the different clans then favourable to the Government. This was objected to, and he had, I learn, much difficulty in getting it effected. He pointed out how necessary it was, considering the political state of the country, to abolish the system of clans on board ships, to render a Government navy effective.

It was finally consented to, and the step carried out most severely, more so than had been wished or expected. Nearly all the crew were discharged, and then the ship underwent a thorough clear out. Japanese mats, doors, futons, fire boxes, sword racks, cupboards, etc., were sent on shore. A few men were kept on board in charge of the ship, and were billeted on the main deck; the lower deck, magazines, store-rooms, cabins, holds, etc., were completely overhauled, and it took some weeks to clear the rubbish out of the ship. The complement of the ship was settled at 275, including officers, and the lower deck was fitted accordingly. Mess tables and stools, bags and bag racks, hammocks and blankets, cooking range, etc., were all provided, store-rooms and holds were properly stowed, magazines fitted, and so on, and then the ship was commissioned. In the meantime it had been arranged on shore that uniform clothing for the men should be provided, and each man was accordingly given a complete outfit of clothes as nearly similar to that of the English sailor as possible. The crew were classed into the different grades of petty officer, leading seaman, able seaman, ordinary seaman, and boy, stokers and marines formed distinct bodies. The crew were taken chiefly from the Hosokawa, Chosin, and Satsuma clans, and a few from the others. The officers were from various clans, the captain was from Chosin, the commander from Satsuma, the first lieutenant from Higo, and the others from other clans, some the same. Many of the midshipmen were from Satsuma. Routine was now established, and a system of watch, quarter, station, and fire bill arranged, similar to that used in the English Navy, and then commenced the course of gunnery instruction.

Many changes took place amongst the officers, and the difficulty of the

clans working together now showed itself, and it was very doubtful whether the thing would answer; however, in course of time the little jealous feeling existing wore off, and now it is a perfect success.

After getting the gun-deck properly fitted, and the guns put in order, certain routines of drill were established, comprising heavy rifled gun exercise, truck gun drill, and revolving gun exercise. All drills were carried on by means of interpreters, the words of command all being given by Lieutenant Hawes in English.

These drills were carried on regularly, till the end of June, when the department held an inspection, to see what progress had been made, and to compare the *Rin Jho Khan* with their other ships, to see if they approved of the alterations.

The result of the inspection was most favourable, for the ship was in good order, considering her former condition, the men drilled very fairly, the regulations on board being followed out to the letter, and all showed promise of progress.

The Arisugawa, No Mia inspected, accompanied by the Faiya, some Daijos, and others of the Hiyobusho. Every alteration was carefully examined, such as hammocks, bedding, messing, ship's books, clothes, etc., etc. The comparison between the *Rin Jho Khan* and the other ships was such as to strengthen the determination of the Government to adopt the English system, and orders were given for all the ships in turn to go through a similar alteration. Our countryman, Lieutenant Hawes, received a public and private letter of thanks from the Hiyobusho, and head of the navy, and (let our Admiralty note this) a suitable increase to his salary. I believe these instructions were sent to Europe to engage the services of naval officers for navigation, seamanship, etc., but as no officers have yet come, I cannot tell you the intended arrangements.

After the inspection, Lieutenant Hawes continued his course of gunnery exercise till the end of August, and then went on leave for some weeks. On return, he commenced a course of magazine drill, sword and cutlass exercise, and exercise frequently at general fire stations.

At the end of October the *Rin Jho Khan* went to Jokotska, to be docked, and he commenced a course of work on board the *Nitsin*. Nearly all the arrangements of her decks had to be altered, and properly fitted, and before that was completed, all the ships were assembled at Yedo, to prepare for a naval review. Our countryman went to Yedo, also, and had to undertake the commissioning of five ships, and all the arrangements for the Mikado's review, even to the smallest detail; of course, much came under his direction totally foreign to the instruction he is supposed to give by agreement. The squadron reviewed consisted of ten ships, and the review passed off very creditably.

During the year, arrangements have been made for clothing the navy ; the ranks of officers have been fixed ; the ratings, pay and allowances for the navy have also been fixed. A corps of marines have been formed (at present about 400 strong, but to be increased to about 800); they are chiefly Satsuma men. A band for marines has been organised, and a bandmaster (Mr. Fenton) engaged. A naval college, for instruction of 200 cadets, has been built ; a naval hospital has been established ; so one may say the Japanese navy has progressed during the year.

I enclose you a list of the Japanese ships now in commission :—

Rin Jho Kan.—Steam corvette, armour belt round water line, 280 h.p., ten guns, viz., two 100-pounder M.L.R. revolving, eight 64-pounder M.L.R. shunt broadside, complement 275.

Nitsin.—Steam sloop, wood, 250 h.p., seven guns, viz., one 7-inch, M.L.R. Woolwich, revolving, six 60-pounder M.L.R. Dutch, broadside, complement 145.

Kotetz.—Iron-clad ram, 500 h.p., three guns, viz., one 300-pounder M.L.R. Armstrong, in fore turret, two 70-pounder M.L.R. Armstrong in aft turret, complement 135.

Katsuga Kan.—Despatch vessel, 300 h.p., six guns, viz., one 100-pounder, M.L.R. Blakeley, four 50-pounder M.L.R. Japanese, one 20-pounder B.L.R. Armstrong ; complement 130.

Moshin, Hoshō, Thabor 1, Thabor 2.—These are gun vessels, commanded by lieutenants, each carrying four guns, viz., one 70-pounder, revolving, one 40-pounder, revolving, two 20-pounder, broadside, h.p. 90, complement 60 to 65.

Chiyoda.—Small steam vessel for cadets.

Malacca.—Steam corvette, not yet armed or commissioned.

Chiom has lately handed over a gun vessel, but I have not heard the details yet. The *Fusiyama*, lately in commission, has gone to Jokotska, to repair and do up for training ship for cadets ; she is an old steam sloop they got from America. There are a few other men-of-war dismantled and unarmed at present, some lying up the river at Yedo, and others at Jokotska. The list I give are the present navy of Japan.

BRITISH AND AMERICAN TERRITORIES.—The Queen has been graciously pleased to appoint Captain Donald Roderrick Cameron, of the Royal Artillery, to be Her Majesty's Commissioner for Surveying and marking out, in conjunction with a Commissioner on the part of the United States of America, the line of boundary between the British and American territories under the second Article of the Treaty of October 20, 1818, from the Lake of the Woods to the Rocky Mountains.

"THE RULE OF THE ROAD AT SEA."

The following important letter is included in the recent Parliamentary Paper on the subject:—

"Association for the Protection of Commercial Interests, as respects Wrecked and Damaged Property, Royal Exchange, London, May 2, 1872.

"Sir,—As it appears that some efforts are being made to alter the Rule of the Road at Sea, which was settled 9th January, 1863, by an Order of Council, and explained by the Order in Council of the 30th July, 1868, I beg to be allowed, on the part of the Committee of this Association, to express an earnest hope that the applications made to secure that object will not be yielded to. * * * *

"I beg further to be allowed to point out, that it has never been intended to suggest, that any rule can be so absolutely, unmistakeably perfect, as that it should be impossible for ingenious people to discover flaws in it, or so clearly expressed, that masters of ships could never be found to misunderstand it, or misapply it.

"If, therefore, the fact were so, as alleged, that many collisions have happened, from misunderstanding or misapplication of the existing rule, it does not at all follow that that rule is not, notwithstanding, the best rule to be found, and a very good rule for general guidance.

"I imagine that the gentlemen who propound new rules, to be substituted for the existing one, will not pretend that their rules are so absolutely perfect, and so clearly expressed, that shipmasters will not misuse those rules just in the same way that they allege that shipmasters sometimes misuse the existing rule. You will see by the observations contained in Captain Heathcote's two letters upon one of the proposed new rules, that it is open to at least as many objections as those suggested against the existing rule.

"I think I am able to say, that, in the minds at least of a great number of nautical gentlemen, the objections to these proposed new rules are more solid and more serious than any that can be alleged against the existing rule.

"Without pretending to exercise any judgment upon a question so strictly technical, I may yet venture to point out that, to say the very best of the position assumed by the objectors to the existing rule, there is a considerable difference of skilled opinion on the subject of the rule of the road.

"But that difference of opinion existed, and was manifested with at least as much energy as it is now, at the time when the whole subject was under deliberation in 1862, and again in 1868, and when the deliberate opinion of the Government and of the Admiralty upon that controversy found expression in the existing rule.

“ This being the case, the Committee represent that it would be, in their opinion, unwise in the highest degree to allow the question to be discussed again, for two classes of reasons :—

“ First. The nautical mind has become impregnated with the existing rule ; and the confusion which will arise if that rule were now to be altered, would be so great and so dangerous, that nothing short of a clear, palpable, almost undisputed necessity, could justify it.

“ Secondly. That the maritime countries of the world have accepted the existing rule. They may have accepted it a good deal upon the authority of the Government of this country, an authority to which the Government is entitled, by its great experience in maritime affairs. But, also, each country must be supposed to have given an intelligent attention to the rule itself, and in adopting it, to have approved it. And I cannot help representing, that the rule could hardly be changed now by the Government of this country alone.

“ I am informed that the gentlemen who are agitating this question seek, for the present, only to have the matter investigated by the Government, or by Order of the House of Commons.

“ I beg to represent that it would be a most unfortunate thing that those gentlemen should succeed in their attempt. The decision of the Government in 1863 and in 1868 must be regarded as a deliberate and almost solemn proceeding ; and, so soon after that decision to begin to inquire whether it was a wise one or not, must tend seriously to shake that confidence of the maritime countries of Europe, which they have manifested in the opinion of this Government on the subject.

“ To settle so important a thing as the rule of the road in the year 1863 and 1868, and to begin in the year 1872, when the whole maritime world has become inoculated with it, to inquire whether or not it was a very bad rule, would seem a course most carefully to be avoided, unless some evident, irresistible necessity for such an inquiry should be established by facts or by reasoning, which the general sense of men would deem to be incontrovertible.

“ With respect to collisions, it has been alleged that the number of collisions has increased, and that the increase and the bulk of collisions at all times were due to the existing rule. I think this statement will not bear examination. I find that the increase in the number of collisions does not bear any proportion at all to the increase in the tonnage of ships, which, without going into detail, I will represent thus : Increase of British tonnage entered inwards and outwards, between 1864 and 1869, 16 per cent. ; increase of collisions everywhere, between 1864 and 1869, under 7 per cent. ; so that it would appear there has been a

considerable relative decrease in the number of collisions since the rule was established. And I beg to be allowed to adduce the fact of the decrease in the number of collisions, commencing shortly after the adoption of this rule, as a pretty fair proof that the rule is having a wholesome operation.

“But I think that, or any other rule, is not to be really tested by the number of collisions at any particular date.

“Collisions are due to things very different from the rule of the road. Probably, the most effective cause of collision is carelessness in navigation; that carelessness is manifested in many ways. It is sometimes having no lights in the ship at all. Very commonly the lights are in very bad order, and do not answer their purpose. At other times it is the bad look-out kept by one or both ships; and sometimes (and I am afraid many times) it is the incapacity of the persons in charge of the ships at the time of the collision; and I am very much afraid that drunkenness has a good deal to do with that.

But besides that, there are dense fogs, dark and stormy weather, and all the natural causes, which, no doubt, must account for not an inconsiderable number. Also increased speed in steamers, a speed which has become almost a necessity both to shipowners and to merchants, but which will certainly lead to collisions in spite of most careful precaution and the most able seamanship.

“I am afraid the gentlemen who try to fix the whole body of collisions upon the rule of the road have their minds so engrossed with this pet topic, that they exclude from their consideration all these other pregnant sources of collision.—I am, &c.,

“(Signed) J. A. W. HARPER, Secretary.

“The Assistant Secretary, Marine Department, Board of Trade.”

NOTE ON THE NEW FORM OF CLOUD DESCRIBED BY
M. POEY IN “NATURE” FOR THE 19TH OF OCTOBER,
1871, A PAPER BY ROBERT H. SCOTT, M.A., F.R.S.

(REPRINTED FROM THE “QUARTERLY JOURNAL” OF THE METEOROLOGICAL
SOCIETY FOR FEBRUARY 21, 1872.)

On reading, in *Nature*, Professor Poëy's description of the so-called “New Form of Cloud,” I at once wrote to the Editor, pointing out that the figure he gave corresponded with one formerly given by Dr. Clouston, as an illustration of the form of cloud he calls the “Pocky Cloud.”

My letter appeared in the next number of the paper ; and the succeeding number contained a third communication on the subject, bearing the signature of "J.," and giving a reference to the *Philosophical Magazine* for July, 1857, where a description of a similar phenomenon is given in a paper "On the Cirrous Form of Cloud," by Mr. W. S. Jevons.

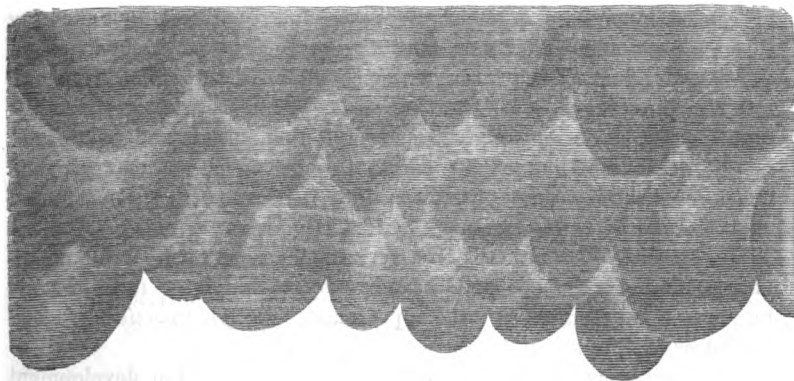
This latter notice of the cloud seems to be the earliest in point of date of publication ; but as Dr. Clouston's, given in his "*Explanation of the Popular Weather Prognostics of Scotland*," published in 1867, was illustrated by the best representation of the cloud which has as yet appeared, I wrote to him to ask for other sketches, and have received four, which I submit to the Society, and reproduce one as an illustration.

The date of the observation of this cloud has not been preserved ; but Dr. Clouston states that it was followed by a storm.

Another sketch is that which has been reproduced in the above-named pamphlet. The observation was made at Stromness Manse, March 5, 1822, and it was immediately followed by a storm, the barometer falling 1·2 inch from 29·5 to 28·3 within 9 hours !

The other two sketches are less detailed.

One was made at Shanghai, August 5, 1871, the observer stating :— "Came on to blow a strong gale about 15 hours after observation, and blew for 6 days ; at same time typhoon, on coast, about 200 miles off." The last sketch was taken in the Mediterranean, November 7, 1871, and the observer reports :— "Had strong breeze for 12 hours ; it came on almost at time of observation."



This is copied from a sketch made at the time of the occurrence of the cloud, followed by a storm ; but the date is not known.

Dr. Clouston has added nothing to his printed account of the cloud, from which I extract the most important portions.

He says that, "when properly developed, it was always followed by a storm or gale within 24 hours."

“ From the sketch it will be seen that this is a series of dark cumulous-looking clouds, like festoons of dark drapery, over a considerable portion of the sky, with the lower edge well defined, as if each festoon or ‘pock’ was filled with something heavy; and generally one series of festoons lies over another, so that the light spaces between resemble an alpine chain of white-peaked mountains. It is essential that the lower edge be well defined; for a somewhat similar cloud, with the lower edge of the festoons fringed or shaded away, is sometimes seen, and followed by rain only.”

He then describes three other observations of the cloud, and concludes as follows:—

“ It is remarkable that on these three last occasions (which he cites) the storm burst out in, or veered to, a direction almost exactly opposite to that in which the festooned clouds had travelled. It is difficult, in other cases, to explain why a particular kind of weather follows a particular form of cloud; and it would be premature to attempt to do so in this case, till observations are made with this view; so at present I rather invite than offer explanation; but I may say that as the cumulous cloud is the precursor of coarse weather, so this particular form of it is always the precursor of a gale, and that I cannot look at it without being reminded of Sir J. Herschel’s experiment of pouring into a large glass vessel fluids of different densities, which do not mix, and which have different colours. An undulatory movement impressed on such a system disappears very speedily from the surface of the uppermost fluid, but continues long after to agitate the lower strata. This cloud, then, may be caused by masses of moist air descending, and forcing their way through drier and colder air; for its form suggests air diffusing itself downwards, just as the form of the cumulus, or the steam from the steam engine, suggests diffusion upwards. If this be so, it shows the moist equatorial current in greater strength than usual, and an uncommonly quick mingling of air currents, differing in temperature and moisture—the very conditions of a storm. *This cloud is well known, and much dreaded by Orkney sailors.*”

Mr. Jevons’s illustration is on a very small scale; he gives an imaginary section of a thunder-cloud near Sydney, in which the form of cloud in question is described as “the appearance of *dropping portions of cloud* at foot or back of storm.”

In the paper he gives two experiments to show how the development of the cirrus may be imitated. In Experiment I. he takes a weak solution of sugar, acidified with muriatic acid, and warms it till its specific gravity is .995. Placing this in a beaker glass, he introduces *beneath* it, by the use of a long-necked funnel, a very dilute solution of nitrate of silver in pure water.

The curdy precipitate of chloride of silver is at once formed in filaments like those of the cirrous, which sinks to the bottom gradually, according as the supernatant syrup becomes cooler and heavier.

In Experiment II. the silver solution is poured in gently *above* the syrup, when "but little cloud at all will be seen to form, even after a considerable length of time; and whatever may happen to be caused by accidental disturbance, will lie in a uniform or streaked flat sheet at the surface, where it is produced, until it finally subsides to the bottom by its own density."

He then remarks:—"It will, perhaps, have been observed, in our experiment No. 1, that the streams descending from the upper stratum into the lower, often end in little knobs, or drops, or *scrolls*, of a peculiar and interesting shape. I do not understand why the descending streams should differ in shape from the ascending ones, which, generally, but not always, end in evanescent points, though it might arise from the tendency of chloride of silver to subside, as mentioned before; but it is remarkable that similar appearances are often to be seen on the under surface of dense cirrostratus clouds, especially at the front or tail of a thunder-cloud (as shown in the figure). Sometimes these drooping portions of cloud, or *droplets*, seem to come in contact with dry air, when their well-defined form is destroyed, and a fibrous or fur-like appearance only remains. They appear to be truly portions of *subsiding* cloud."

It will be seen, therefore, that Dr. Clouston and Mr. Jevons agree as to their idea of the formation of the pocky cloud, from the contact of two strata of air in very different hygrometrical conditions; but there is nothing in Dr. Cloustons account to support the view propounded by "J." in *Nature*, that the phenomenon occurs when the cloud is about to break up. In fact, he expressly points out the modification in its form which indicate this.

M. Poëy is disposed to attribute the formation of the cloud to electricity; at least, I cannot gather any other conclusion from his letter, although he does not expressly state how the electricity acts.

A similar view is entertained by Dr. John W. Moore, of Dublin, a most careful and accurate observer of meteorological phenomena, and especially of clouds. I subjoin a letter which I have recently received from him on the subject:—

"40, Fitzwilliam Square West, Dublin,
November 15th, 1871.

"My dear Mr. Scott,—The letters in *Nature* on a new (?) cloud were interesting; but the discoverer need not have described it as being very rare. So far as I could gather from his description, it is the form of cloud which I have long noticed under the following conditions:—

"1. In some thunder-storms portions of the *lofty cirrus* and *nimbus*

exhibit the appearance in question, the under aspect of the cloud being gathered up in round folds.

"2. Often in cyclonic systems, at the moment when the wind is changing, the *cirro-stratus* layer of the clouds presents a similar form. And, lastly, frequently,

"3. In showers of hail the high *cumulo-stratus* becomes puckered, as in the 'new cloud.'

"Considering the above conditions, it appears to me that two elements are required for the production of these phenomena.

"1st. A rapid condensation of vapour, and

"2nd. High *electrical* tension.

"From the above consideration I think it would be better to regard the appearance, not as a new form of cloud, but as belonging to clouds of various kinds, under certain conditions.—Yours very truly,

"(Signed) J. W. MOORE."

We may, I think, reconcile these two views by the consideration that the contact of two masses of air, at very different temperatures, and in very different hygrometrical states, are precisely the conditions which give rise to the development of electrical action in the atmosphere, and to thunder-storms, so that a high state of electrical tension would accompany the forcible intermixture of a damp with a dry stratum of air.

I profess myself unable to see how electricity could produce any such modification of the form of a cloud, while we know, by experiment, that the appearance may be reproduced by gradually mixing two fluids of slightly different specific gravities.

It may be interesting to give, in conclusion, one of Dr. Clouston's notices, showing the value of the cloud as a premonitory symptom of a storm :—

"Another observation of this cloud was on 10th March, 1864, when I noted, in the morning, light fleecy clouds, in rapid motion, below compact dark ones. At 8.30 in the afternoon, the pocky, or festooned clouds, were seen for ten minutes to the westward, moving before the south wind, probably not more than 300 or 400 yards up; and when they blew past, a more bright and quiet sky appeared in the west, and about 7 p.m. red-coloured aurora.

"Nothing remarkable occurred that night, and next forenoon was so fine and bright, that I was induced to go to Stromness, about six miles off, to bring home a member of my family, though still under some dread of the festoons.

"We started for home in an open gig, nearly twenty-six hours after their appearance, during a flat calm, and I began to doubt if there would be any storm at this time; but I soon paid for my incredulity, for at 5.30, or just about twenty-six hours after the festoons, such a sudden

storm of N.N.W. wind burst in our faces, accompanied with quantities of wet snow, that though we persevered for the remainder of the six miles we had to drive, it was decidedly the worst weather I have travelled in for more than half a century; and it was only after the breaking of an umbrella, and losing of a shawl, that we reached home in a wrecked condition. I found by the registering anemometer that the wind suddenly commenced thus, with a velocity of nearly sixty miles an hour, and continued so till after midnight. This obliges me slightly to modify my former opinion, that 'it was always followed by a storm or gale within twenty-four hours;' for on this occasion it was *twenty-six* hours afterwards. On 10th the barometer stood at 29·236 in the morning, and 28·978 in the evening, and on 11th at 28·938 in the morning, and 29·108 in the evening. On 10th the wind was S.W., force, 1 in the morning; and S., 2 in the evening; and on 11th, W.S.W., 1 in the morning; and N.W., 4 in the evening.

MARINE PAINTINGS IN THE ROYAL ACADEMY.

COMMUNICATED BY AN OLD SAILOR.

WHETHER the *Nautical Magazine* finds its way into the studios of our painters we cannot say, nor can we say whether our strictures of last year have been pointed out to the "Hanging Committee," who have in consequence retained a sailor with a view to exclude from exhibition, marine paintings in which the water would never float any ships nor the ships float on any water; but we learn that the seaman's eye is less offended by incongruities in shipbuilding, proportions of spars and sails, and position, than it has been for some years. Certainly the number of marine paintings is fewer than usual, but of the few there is little to offend the eye of a sailor in matters of detail. We still maintain our opinion that it is as necessary to the artist, who adopts marine painting as his special line, to study the proportion of ships, spars, sails, and all pertaining to the subject, as it is for the sculptor to study anatomy. The following are the observations of our critic:—

The first picture that struck me is not strictly speaking a marine painting, although its subject may be considered marine. At all events, I feel assured I shall be pardoned for drawing attention to Mr. Graham's beautiful picture, "The cradle of the sea-birds." It has not fallen to the lot of the many to have had a boat cruise on a fine day under such cliffs as are here depicted, but to the memory of those to whom it has, this picture will bring back vividly all the beauty, and I

may add, awe and delight, experienced then. The rich green, where a ledge has afforded a rest for vegetable growth, the peculiar haze almost invariably seen at the base of sea-washed cliffs, the busy multitude of sea-fowl, the darkly stained rocks, all are there, and represented with such force and reality that it was difficult to withdraw my attention from it. I was particularly charmed with Cooke's "Hastings luggers coming on shore in a breeze" (No. 246). The sea is refreshing, and the life and action of the boat, the truth of the sails and colouring, struck me as rendering it one of the best pictures. Out of the four paintings by Hook, there cannot be a doubt that one at least, "As jolly as a sand boy," will rank among his best efforts. It is a pleasing picture and captivates at sight. I cannot quite say that of his "Between the tides" where the rocks are stiff, but in all the four we cannot but congratulate Mr. Hook in departing from his almost stereotyped green. The nearest approach to this objectionable colour is in No. 265, "Gold of the sea," where the sea and land are of too crude a green. They are redeemed somewhat by the figures and fish in the foreground. "The South Stack Lighthouse, Holyhead: gale moderating," by R. B. Beechey, a masterpiece of water painting, and most certainly the correct drawing of the disabled ship, adds greatly to the value of the picture. There is, however, a want of that misty haze that is always seen on the shore after a heavy gale. In "Sailing free," C. Hunter, the water strikes a sailor as being frittered and woolly; appearances which are not warranted by the time of day, or state of weather. The wave thrown off from the boat's bow is not correct; the glimpse of sunlight through the clouds on the water is natural and is the best part of it. Near it is a much more pleasing picture, by a Dutch painter, H. W. Mesdag, and although the water in his "Fishing smack coming into Scheveningen" is more like that of a sea breaking over a bar, it is generally good in colour. I was also greatly pleased with Mr. Sampson's "Old Bob's boat, Folkstone." The lift of the boat as she approaches the shore and the sea are happily caught and naturally rendered. I stood for a long time greatly enjoying the three beautiful water colour drawings of Mr. Beverley. In the "Pier at Newhaven" (No. 759), the bubbling waves to windward of the pier are capitally rendered, and the old timber pier and figures admirable. I turn to "Filey Rocks" and study the whole effect of rocks, sea and atmosphere, is to be reminded truly and forcibly of what that much dreaded portion of the coast is. Mr. E. Hayes's "Genoese craft entering the harbour of Genoa" is altogether pleasing, with the quaint craft. The same must be said of the same gentleman's "Dutch boats on the Scheldt" and "Genoese craft off Ventimiglia." "The approaching storm," by G. A. Williams, is good, but I, as a sailor, should say the storm had already come.

I stood a long time before Mr. J. Brett's remarkable picture of "Whitesand Bay," unable to make up my mind concerning it. That the water coming in over the sands is natural there cannot be a doubt, and the birds are represented as the sailor's eye is accustomed to see them, but those who are much on the sea will say that such a clear atmosphere is not accompanied by a weak sun. In his very pleasing picture, No. 998, the subject would have been better described as "Squally weather." The squall itself over the island is such as to make any man stand to his halyards and sheets; the sea for such weather is overcoloured.

No. 608, "A misty morning," is a gorgeous piece of colouring and the ship is well drawn, but I have experienced many misty mornings and have never seen such colour through the mist.

Mr. Mason, in his pictures of "Spithead" and "The Point, Portsmouth," comes under my consideration as a sailor. That he must study the form and proportion of ships, is instanced by that line of battle ship coming into the harbour; there is a stiffness too in the water and sky. Mr. G. E. Herring's picture, "Sunset after a storm, &c.," is a beautiful effect and rich in colour. "Slack the mainsheet," by H. Maculium, is a good painting of a man and a boy in a boat; but there is nothing marine about the water. The sea in "Wrecker's at the Land's End," by Mr. Stannus, is truer, and the picture is pleasing, although the tale is not well told. "We can do no more for you," by W. H. Overend, is not good, and as the artist can now do no better than this for us, he should study both ships and water before he essays anything in the future. In No. 658, "Coast of Scotland," by Danby, the ship is well drawn and the light on the waves natural and splendid. "The dock scene" (No. 1038), by Mr. Dudley, the spars of the numerous shipping are out of proportion to the masts and ships. I cannot understand No. 988, "A Winter Gale in the Channel," by H. Moore. If a white-wash brush, some wool and a scraper could make a picture, it would look like this one.

NAVIGATION OF THE ORINOCO.—The waters of the Orinoco in all the extent embraced by its mouths up to Ciudad Bolivar, are open to navigation for commerce in general, and the blockade of the coasts of the said river is suspended; the decree of the 2nd of October of 1871, which established it, being in consequence abrogated.

THE PRUTH BRITISH SHIPPING DUES.—The Pruth Commissioners have raised their Tariff from 1st January, 1872, as follows—viz.: 70c. per ton for vessels navigating the Pruth, not passing Rogojeni; 80c. per ton for vessels not passing Falcin; 90c. per ton for vessels passing Falcin.

STEAM SHIP EFFICIENCY.

By C. LAMPORT, F.S.S., F.S.A., ASSOCIATE MEMBER OF COUNCIL OF THE
INSTITUTION OF NAVAL ARCHITECTS.

WE English claim to be pre-eminently a "practical" people, inclined to "feel our way," and apt to look slightly upon scientific guidance. In this we show at once our commercial wisdom and our scientific—or, as the fashion now is to call it, "technical"—ignorance. So long as anything "pays," it would be foolish for the commercial or manufacturing man to disturb the relations between established method and its associated profit. His care is "to meet the market;" and if his products sell, why should he quit routine to aim at results too good to be appreciated by contented customers?

But if the faith of the consumer be shaken, and he awakens to the fact that what he buys is neither the best that could be made, nor the lowest in price, he may ask awkward questions and insist upon troublesome changes. Then the difficulty of the "rule of thumb" producer becomes the foreigner's opportunity. The superior training and higher scientific attainments of the latter acting upon what he can easily glean from the "practical" man's experience, give him great advantages, both as to the quality and price of his products. Hence it is that the practical man realises his deficiencies, and, in his blind desire to "do something," turns to the man of science for counsel and help.

But, broadly considered, what is science, or, more properly, what is science applied to industry, or *technology*, but the intelligent collection of clearly marked results; the evolution of proximate causes and their classification into system or law? And who has the opportunity to gather such facts, pertinent and coherent in their nature, and of such fulness and abundance, and of every-day use and value whence to evolve law, except the intelligent practical man?

To ask the assistance of the man of science without providing the necessary crude materials to put into his crucibles, place under his microscope, and subject to his analysis, in order to trace sequences and elaborate causes, is simply to require him to make bricks without straw. Only a degree better, if, indeed (because of the liability to error) it be not absolutely worse, is it to leave him (particularly in all that bears on steamship efficiency) to build up theories upon minute experiments and narrow and necessarily incomplete investigations.

As regards the subject of this article, it appears to us that the man of science has no reliable information whereupon to work.

Steamship efficiency depends upon the ascertainment of engine power and of fluid resistance. Upon the proper estimate and proportionment of

each of these elements depends the due appreciation of the final results. Without such estimate we do but grope our way to improvement, and cannot obtain even the key to our present success. And yet, as regards the first, we are content with a formula as useless as an incantation; and with this formula, which enlightens nobody and, luckily, deceives nobody, we gravely proceed to determine the value of the latter!

So long as steamships "pay," why, as matters now are, should the owner trouble himself with vague attempts to make good better, with all the intervening chances of failure? He knows the expenditure of fuel, and he knows the speed of the vessel, but we venture to predict that it will only be when pricked on by loss that he will set himself to understand all that lies between these two extremes. Prevention, however, is better than cure; and we suggest to him the following enquiries. How much of the heat generated—the real index of power—is wasted in boiler inefficiency? How much is misapplied through defective engine design and workmanship? How much is choked and destroyed by a badly selected or wrongly calculated screw? How much by a badly designed ship?

These questions must be answered before the normal cost of propelling a vessel can be ascertained, and the true measure of her fluid resistance determined. Until they are solved the best engine may be disgraced by association with a badly modelled ship, or the most beautifully designed vessel have to bear the sins of a defective engine. *Suum cuique*. Let us briefly note what stands in the way of this act of justice to both commerce and science.*

* At the Cardiff meeting of the Royal Agricultural Society, (see *Times*, July 13, 1872) the consumption of coal, per horse-power per hour of six engines of eight horse-power each, was ascertained as follows:—

2·89	lbs.	per	horse-power	per	hour
3·029	"	"	"	"	"
3·28	"	"	"	"	"
3·28	"	"	"	"	"
4·96	"	"	"	"	"
10·1	"	"	"	"	"

Taking the extremes, a difference of 286 per cent. was shown by the "duty" test. The steamship owner might have worked these two engines unconscious of the difference, inasmuch as the good engine might have been put into a slow ship and the poor engine into a fast one.

It is rather curious that it has been left to the "agricultural mind," so complacently depreciated by manufacturing and commercial intelligence, to institute the only authentic practical experiments for determining the competitive excellence of steam engines. The combined caution, acuteness and good sense shown in these trials of engines for agricultural purposes, is at once a rebuke and an incentive to the "happy go lucky" indifference of other branches of industry, to whom economy in all that affects the working of steam engines, is so much more important.

1. "Nominal horse-power" is the loose, popular term used to designate the capacity of a steam engine. The formula which determines its value in respect of any engine was invented and applied by James Watt, who assumed the power of a horse to be capable of raising 33,000 lbs. one foot high per minute. His formula is as follows:—

$$\begin{array}{l} \text{Area of piston } \left. \vphantom{\begin{array}{l} \text{Area of piston} \\ \text{in square inches} \end{array}} \right\} \times \left\{ \begin{array}{l} 7 \text{ lbs. pressure of steam} \\ \text{per square inch.} \end{array} \right. \\ \times \left\{ \begin{array}{l} \text{Speed of piston in} \\ \text{feet per minute} \end{array} \right\} \text{ divided by } 33,000 \text{ lbs.} \end{array}$$

equal to horse-power. The pressure being assumed as uniformly 7 lbs., and the speed of piston also assumed to be at a given rate for a given length, the element indicated by the whole formula is simply that of cylinder capacity, with an understood relation of subordinate parts. The value of the term, therefore, is for other purposes than that which it professes to express. It means, virtually, that when a buyer contracts for an engine, he ensures the conditions of a given *structural* capability; but it by no means follows that such capability is properly developed or fairly utilised. He may have bought the bone and bulk of a cart-horse, when he expected a hunter's power and endurance.

2. "Indicated horse-power" goes a step beyond. It gauges the actual applied force. The positive pressure of steam and the negative vacuum enhancement of that pressure, are measured and noted, in all their varieties through expansion, by the operation of the "indicator." By substituting this result, so clearly shown, for the arbitrary 7lb. pressure of "nominal horse-power," and the actual instead of the supposed speed, a considerable step is made towards improvement. But it ends as it begins, with the cylinder. It takes no account of defective boiler arrangements, of anterior condensation, of throttled steam in passages and valves, on the one side; nor does it deal, on the other, with any of the numerous varieties of engine build. Whatever may be the relative merits of fixed, over oscillating cylinders, or the reverse; of long or short stroke; of single or double; of upright or horizontal cylinders; of long or short connecting rods; or of good or bad workmanship; "indicated horse-power" is silent on all. It merely says, "I measure the force applied, but as to how it is generated, or how it is made effective, I know and can tell nothing." In short, it leaves out the fuel consumption on the one hand and the "duty" performed on the other. It possesses a comparative value as between engines of the *same make* or description, but none between engines of differing construction. It is, therefore, no true measure of the force applied to propel a ship, and is no safe guide to determine the amount of fluid resistance, either absolute or comparative.

3. Mr. McFarlane Gray proposes to fuse these two defective standards

under the name of "nominal indicated horse-power." His ingenuity, however, seems to us only to succeed in destroying the conventional (structural) precision of the first, while he deprives the other of its value as a clear measure of applied force by complicating it with a rough furnace measurement as an approximate rule for fuel consumption. Mr. Gray has thus gone too far, and yet not far enough—far enough to disturb, but not so far as to effect a settlement of scientific precision and utility. Our contention is that anything short of such a settlement is worse than useless. Old landmarks made useful by their known and allowed-for inaccuracy would be removed, a popular faith would be shaken, without advance or improvement except in degree. "Better to take the ills we have, than fly to others that we wot not of." Better the old, plus the intuitive, well-worn correctives, than any new standard, only *in degree* less arbitrary.

4. The next absorbent of power is the screw. What portion of the heat power is smothered and lost here it would be difficult to say; but the difficulty is lessened by the comparatively easy competitive trial which might be made in any vessel under equal conditions.

This question was experimentally investigated some years ago by Mr. Rawson and Mr. Fincham, formerly master shipwright of Portsmouth Dockyard; and we believe the relative merits of various descriptions of screws have been, from time to time, tested in practice by the Admiralty. For the present aim of this article, however, we may consider the screw as a part of the engine, as also we are compelled so to consider the boiler.

5. From what we have so far stated, we venture to think it must be evident, that the present modes of estimating the power of a steam-engine furnish us with no reliable measure of the *work done* in propelling a ship at any given speed. On the other hand, we hold that there exists no other reliable *data* wherefrom may be deduced the actual *resistance* to any ship's form passing through the water at various rates; and we further maintain that, upon the due determination of this resistance, depends the satisfactory solution of the question of engine "duty." Lastly, we contend, that the determination of the fluid resistance, in regard to the single ship, and by actual experiment on the ship herself, furnishes the only means to collect such a mass of information as may enable mathematicians and others to establish some fairly reliable formula.

No doubt the difficulties of this subject have often been grappled with, and no doubt as often overcome, at least, to the satisfaction of the experimentalists themselves. But analyses, however acute, and computations, however profound, may, nevertheless, be based on insufficient *data*; and we even fear that the experiments now being, or which have

lately been, carried out by Mr. Froude, at the instance of Government, will do little, if anything, to make that *data* more extended, or correct, for practical purposes. We hold, in short, that a ship's *own form and bulk* can alone be the true standard and exponent of her own resistance: that every ship must be a law to herself; and that the aggregate of such results, properly recorded, will be the only reliable *data* for evolving a law for practical use and application, as regards fluid resistance on a large scale.

The process by which this might be effected, appears to us perfectly simple in itself, and quite easily to be carried out.

What we propose is, merely to subject all new Government vessels to an actual resistance test, *by towage over the measured mile, at various speeds and different draughts, with an interrening dynamometer.*

If, in addition, similar trials could be made by large private builders, or steam ship companies, so much the better. If such trials were made imperative in the case of all vessels carrying mails, and even passengers, as a condition of contracts and licenses for such purposes, better still.

From trials of this nature, properly made and authenticated, tabulated results might be collected, general enough, and sure enough to test the equivalent horse-power, for various speeds, of the engines working the vessels tested. The propelling power being neither more nor less than a counterbalance of the fluid resistance to the mass propelled, the measure of that resistance by the index of the dynamometer, would be also the measure of the "horse-power" absorbed to overcome it.

The "duty" of the engine (*i.e.*, the ship's resistance) thus made clear, all other difficulties vanish.

Fuel consumption, engine-power, and fluid resistance would become synonymous terms.

Any formula, correctly designating one, might, *mutatis mutandis*, stand for any other. Comparison of all sorts of engines, boilers, and screws would become easy; and in time, the specific results of "wave lines," "plough bows," "wedge bows," or "inclined bows," and of all descriptions of "runs" would be measured accurately, to the great advantage of naval architecture. What the measured base line, as a starting-point, is to the trigonometrical survey of Great Britain, this one element, from which error has been carefully eliminated, may be made for determining all that bears upon steamship efficiency.

The institution of these trials by the Admiralty, appears to us, as outsiders, to be so little difficult as to excite surprise that such trials have not long ago been undertaken.

The employment of one or two powerful tugs, to tow a new ship, both when launched, and when equipped and laden, over the measured

mile, with a dynamometer, would cost the country very little in comparison with the certainty and value of the results to be obtained.

The action of the vessels own engines, at the same trial, could then be similarly tested, and the "indicated horse-power" ascertained, as against the real "duty," which could be noted as accurately as that of any Cornish pumping engine.

We feel that the matter is so simple, and so clear in its simplicity, that we should only darken council by a multiplicity of words, and slay again the already slain, by renewed arguments. If the proposal does not recommend itself at first sight, argument will scarcely make its merits more apparent.

The fluid resistance of a ship in motion is at present an enigma. "Horse-power" is a delusion. The formulas which clever men have honeycombed their brains whereby to elucidate both, have no back-bone. Reasoning in respect to the whole question runs in a vicious circle, and all from the want of a basis of fact. Empiricism and dogmatism have had their day. Such wisdom has cried out in the streets, and no man now regards it. Let us, therefore, do something to substitute hard facts, about which there can be neither doubt nor debate, for the crude speculations which have perplexed the practical man so long. To justify our pretensions to be a thoroughly practical people, why not adopt the really "practical" means whereby steamship efficiency may be advanced, and fairly brought within the sphere of science?

ROYAL NAVAL RESERVE.—The actual strength of the force is now 12,120 drilled men, of whom about 9,000 are at home.

NAVIGATION WITHOUT STEAM OR SAIL.—We have been requested to publish the following very tempting offer:—To the shipowners, builders, and naval engineers of Great Britain.—Gentlemen,—Looking to the well-grounded fears aroused by the exhaustion of coals, and in the interests of commerce with the different countries, I have the honour to bring to your notice, as men of nautical knowledge, the means of navigating, with unfavourable as well as with favourable winds, without the aid of steam or sail. However, as my discovery is of very great importance, I require a sum of 85,000 francs to be deposited with a lawyer, with the deed of sale of my invention for the above-named sum, by which deed I bind myself to give a clear explanation of my system, to contend with or to silence all objections raised against it, and to prove the facility of navigating and steering in a better way than with sails.—Believe me, Gentlemen, etc. (Signed) N. COUVREUR, Roche sur Yon, Vendée, France. It must be understood that the lawyer in question shall be chosen from among those of Roche sur Yon (Vendée, France) where, also, the conferences shall be held.

CORRESPONDENCE.

MARINE BOARD EXAMINATIONS.

To the Editor of the Nautical Magazine.

SIR,—I have read the communication, signed “An Old Salt,” given under the above title, in the July number of your valuable and widely-circulated *Magazine*. As the criticism is adverse to my “Marine Board Catechism,” I trust you will allow me to make some remarks in vindication of the correctness of my work.

It is to be regretted that two such useful classes of men as nautical authors and practical seamen should (to use plain language) so often abuse each other.

“Old Salt” has evidently a prejudice against mathematicians; let him therefore hear what is said of his class in an otherwise excellent pamphlet, recently published:—“The majority of seamen are unscientific and non-mathematical.” Again, speaking of the officers of the merchant service, the same author says, “One has only to attend an inquiry into the loss of an iron ship, when the crude questions asked, and equally crude answers given, fully testify that nautical assessors, masters, mates, and pilots are all in the same category.”

Although I make these quotations, I do not approve of such language: as I believe the officers of the merchant service to be a manly and energetic class of men, ready to obtain information; and that the faults imputed to them by some authors, arise from the latter insisting upon seamen to acquire scientific knowledge by using technical phrases, which are antiquated, and do not express correctly the ideas intended to be conveyed.

“Old Salt” says that I use var^d as a contraction for variegated. It is surprising that so acute a critic should make a mistake in spelling the word varied. I call a bearing taken by a compass on shore a varied bearing, because it is affected by variation; whereas a bearing taken on board a ship I call a deviated bearing, as the compass is affected by deviation. These terms are simple, and avoid circumlocution. I am sanguine that they will be universally adopted by practical navigators; and that, instead of condemning me, they will thank me for their introduction.

With regard to dip, I define it to be “the angle between the visible and sensible horizons,” for the sake of brevity; leaving it to be understood that the angular point is at the eye. The only angles which a second mate is accustomed to measure, are altitudes; he would, therefore, at once understand my definition to mean, that dip is the altitude of the

sensible above the visible horizon ; or, in other words, it is the depression of the visible below the sensible horizon : which it is. I therefore submit to your readers that my definition of dip conveys the correct idea of its true meaning ; it is expressed briefly, as ordered to be done by the Board of Trade.

The same with the term sensible horizon. I define it to be a plane touching the earth's surface at the place of the observer ; but it is also implied by me that a plane parallel to it, or to the visible horizon, and passing through the observer's eye, is a sensible horizon.

I hinted in my "Catechism" that what is called visible horizon by astronomers, might very appropriately be termed the sea horizon, or rather (I would now say), the observer's or observed horizon. Similarly, for sensible and rational, I suggested the terms, apparent and true ; if this were done, there would be no confusion in naming altitudes, as they would be named the same as the horizons to which they refer.

But all nautical authors, as far as I am aware, name what I would call apparent, the sensible horizon ; consequently, you might expect that when dip is subtracted from the observed altitude, they would call the result the sensible altitude ; they, however, call it the apparent altitude, which I do not think is a very sensible proceeding, as it produces a stumbling-block to learners.

I plead for giving correct names to every quantity used in nautical calculations, and that they should be consonant with the ideas intended to express. Were authors to adopt this system, perhaps "Old Salt" would exclaim, "Oh ! these authors will be the life of us seamen."

I may inform "Old Salt" that I have now been nearly fifty years an author and instructor, and that I can reckon my pupils and the readers of my works by thousands. He might, therefore, infer that I would cautiously avoid making mistakes in such important points as he alludes to ; and I hope he will now be convinced that I have not made those which he imagines I had done.

As to "Old Salt's" inquiry whether I am authorised by the Board of Trade in making certain remarks, I cannot see that I gave any occasion for it : the whole work is written entirely on my own responsibility.

In conclusion, I beg to say that I am sanguine that my "Catechism," Parts I. and II., will be found to be a complete Manual for candidates preparing to pass their Marine Board Examinations. If it is patronised as extensively as my former publications have been, I shall be satisfied that my labour has not been in vain.

P.S.—The horizons may be thus mathematically defined :—The rational horizon is a great circle on the celestial sphere, whose plane passes through the centre of the earth, and is perpendicular to the vertical line joining the zenith and nadir ; and, therefore, passing through the observer's

eye; it is, therefore, the great circle whose poles are the zenith and nadir. The sensible horizon is a small circle whose plane passes through the observer's eye, and is parallel to the rational horizon. The visible horizon is the circumference of a small circle which bounds the observer's view at sea, and its plane is parallel to the other horizons: every point in its circumference is the end of a tangent drawn from the eye to the surface of the earth; or, if we suppose a cone having the eye as its apex, and its surface touching the surface of the earth in a small circle, the latter will be the visible horizon.

"Old Salt" has now before him my practical definitions, as also those strictly mathematical; he is, therefore, quite welcome to choose between them.

JAMES GORDON.

Morden College, Blackheath, S.E., London.

[Any further correspondence on this subject must appear with the correct names and addresses of the writers. It is only fair to Mr. Gordon that his opponents should declare themselves.—ED.]

To the Editor of the Nautical Magazine.

Meteorological Office, 116, Victoria Street, London, S.W.,
July 12th, 1872.

MY DEAR SIR,—The enclosed has come to me through Mr. Towson, of Liverpool. It seems worthy of a place in the *Nautical Magazine*, as these large icebergs hang about for months.

The Hydrographical Department of the Admiralty has published an excellent ice chart for the southern regions, which should be in the hands of all Australian navigators. By plotting Captain Greig's position on that chart, I find that he was on the unshaded part, where he had good reason to expect to meet with ice at that season of the year.—Yours faithfully,

HENRY TOYNBEE.

(Extract of letter from Captain J. G. GREIG, ship *John o'Gaunt*, dated Melbourne, 20th May, 1872.)

"On the 7th April, in lat. 43° 31' S., and long. 7° 33' E., at noon, we sailed for about 125 miles through large icebergs, very close together, with detached pieces to be seen floating about, on one of which we narrowly escaped being lost. The first iceberg was seen at two a.m., the night being dark and thick, with rain at the time; it was right a-head, and the look-out, thinking it was a white cloud, said nothing till we were almost on it, when the helm was shifted, and we ran close by a large iceberg. Many of them must have been fully 200 feet high, and very large, and at the smallest

computation 130 bergs were seen between two a.m. and five p.m., when we finally cleared these dangerous companions. Getting among the ice so early made me determined not to go into so high a latitude on the Composite Great Circle Route, as I had at first intended (52° S.) 47° being the greatest latitude attained. I may not be altogether right, however; for I should think it not improbable, at that time of the year, that as much, if not more ice, would be found in 45° S. as 52° .

“The few captains here have asked me why I went so far south, from which I infer that a high parallel for running down the Easting is not general. Just before coming to Kerguelan's Land, we experienced a very heavy gale, barometer going down to $28^{\circ} 80'$ in a very short time, and after passing that place we had some very heavy S.W. gales, with mountainous seas and snow squalls for days together. On the 20th April, in $45^{\circ} 30'$ S. lon., 90° E., we saw two very large icebergs, it blowing a heavy S.S.W. gale at the time, with hard snow squalls, and bitterly cold weather.

“The icebergs seen on the 7th April are in a very dangerous position, being not only in the track of vessels bound to Australia, but also those bound to India. Last voyage to Calcutta, I was not fifty miles to the north of their present position.

“I should be obliged if you would send Mr. Towson (who, I know, is interested in these matters) a copy of this portion of my letter——”

OUR OFFICIAL LOG.

SUEZ CANAL DUES.—Messrs. Mosses and Mitchell, the London Transit Agents for the Suez Canal Company, have been authorised to publish the subjoined letter in reply to an influentially signed memorial concerning the present change in the mode of levying dues:—

“Paris, July 5.

“Gentlemen,—Together with your letter of the 25th of June, we received the memorial, in which a certain number of English shipowners make observations with reference to the new basis of levying of duties in operation since the 1st of July.

“We have communicated this memorial to the Administrative Council of the Company.

“The shipowners state that the principle generally admitted for the levying of taxes and dues applicable to steamships is to grant a reduction for the space occupied by the engine, the fuel, &c., and they seem to think that the Suez Canal Company henceforth intends levying its dues on the total capacity of the steamers, and without allowing

any deduction for the engine. This idea, however, is the result of an error.

“The principle which has guided the Administrative Council in the adoption of the new measure consisted in subjecting each ship to a duty of 10*l.*, as often repeated as the ship is capable of carrying tons of goods—viz., in basing the levying, conformably with the acts of concession, on the capacity of the ships. The Council, moreover, has found out that it was necessary to increase by 30 per cent. on an average the tonnage inserted in the official British papers, in order to arrive as closely as possible at the exact capacity of the ships. Afterwards it has admitted that from this total tonnage an allowance of 25 per cent. should be conceded for the space occupied by the engine, &c. Now, if we increase by 30 per cent. on an average the tonnage inserted in the official British papers, or gross tonnage, in order to obtain the total capacity of the ship, and if afterwards we deduct the 25 per cent. from the sum obtained, in order to allow for the space occupied by the engine, we arrive exactly at the figure expressed by the gross tonnage. It is, therefore, for the purpose of simplification that the Company has adopted the gross tonnage, after having found out that the number of tons expressed by the gross tonnage indicated as exactly as possible, and, as a rule, the capacity to be utilised in the ships. We now fairly ask the shipowners whether it is not true that the net tonnage inserted in the official ships' papers is notoriously inferior to the real capacity of the ships, and whether it is not likewise true that the gross tonnage indicates with an average exactness the precise capacity of the steamers' measurement, or the number of tons which the ships are able to carry? It is on account of these considerations that the Council of the Company has made the decision of the 4th of March, by which the new basis of the dues has been fixed, and, these considerations still prevailing, the new tariff remains unchanged. We do not disguise from ourselves the importance which this change must have for the shipowners, but these gentlemen must certainly acknowledge that it would be unfair that shareholders who were so persevering and courageous as to endow the maritime community with this new means of communication should remain any longer without obtaining the reward due to them. I beg you to communicate this letter to the steam shipowners in England.—Please receive, gentlemen, &c.,

(Signed) “FERDINAND DE LESSEPS, President.

“M. COURETTE, Managing Vice-President.

“To Messrs. Mosses and Mitchell, London.”

[The following formula expresses the above decision, and in the case of a steamer of 2,000 gross tons, viz., $2,000 + 30 \text{ per cent} = 2,666$; and $2,666 - 25 \text{ per cent} = 2,000$. We have an article ready on this subject,

but we are compelled to defer it owing to pressure on our space. We shall go very fully into it in our next.—ED.]

ROCKETS FOR SAVING LIFE.—The President of the Board of Trade has been asked in Parliament whether he is prepared to introduce a scheme which would oblige every ship to carry a properly-fitted rocket apparatus, and a book of instructions for its use, to save the crew in case of stranding. There is a growing fancy for asking persons in authority to require ships to carry appliances, contrivances, and gimcracks, without number; and if the President of the Board of Trade were to adopt all the suggestions made to him, we expect that the British ship would become a receptacle for curiosities, and leave but little room for cargo or crew, and but a poor chance of making a profitable voyage. The last suggestion is this one about rockets. At present, as every one knows, the shipowner can provide rockets, and mortars, and lines, and life buoys, and boats, and anything else he likes, without let or hindrance, and he does provide many things that are seldom used. If rockets were deemed to be of use, they would be supplied, and kept up. But the shipowner, looking to the wreck register, and to his own experience, knows that it is only about one voyage in 360 that ends in a stranding; and he knows, further, that even that one stranding may or may not be one in which the rockets could be used, if they were on board, or would be effective, if they could be fired. It is too much the practice of so-called humanitarianism to exercise itself by attempting to compel practical people to adopt expensive and useless contrivances or appliances, and nothing illustrates this so forcibly as the suggestions made by kind-hearted men to hamper the shipowner, and waste his money. Rockets cost 23s. each; they are not toys, but with their sticks, are ten feet long, and weigh nearly forty pounds. A ship must carry at least two dozen of these, because, above all things, the crew must be taught to fire them and exercised in their use. Duplicate and triplicate lines, &c., must be provided besides, and a stand or two stands, from which to fire the rockets. The first cost to the shipowner will be about £56 for each set of apparatus, and the annual cost for wear and tear and expenditure will be £30, and this is to be incurred on the supposition that the apparatus will be ready, when wanted, and will be effective, when used, and in the knowledge that the chances are 360 to one that it ever will be wanted. But on ship-board these sort of things are not much attended to, and the lines might be neglected, or crews might not exercise the apparatus sufficiently, or, not at all an improbable supposition, the lines might get foul and part. In these cases, the good folks on the beach, who had come down to render assistance, would find directed at them from the ship one of the most fearful of war engines. A life-saving rocket, without a line, has a range of a mile. It was with a few of these

“life-saving rockets” that a coastguard officer, in Ireland, dispersed a large band of Fenians. These rockets would be sent from the wreck in amongst the people and the houses on shore. After all, it will probably be best to let practical people alone in these matters. They will use the apparatus from the shore, where it can be used; but where it cannot be used, if, for instance, the ship is out of range, it cannot be used, and nothing that the humanitarians may say can lessen distance, or alter the fact.

PORTUGUESE CUSTOMS TARIFF.—Alterations in the General Customs' Tariff. Instead of the duties of importation, exportation, and re-exportation, laid down in the General Customs' Tariff, on the articles mentioned in the schedule which forms part of this law, the following duties shall be levied:—

Name of Merchandise.	Unit.	Duties.	
		Reis.	Stg.
IMPORTATION.			
			d.
Molasses	kilog.	20	1·06
Petroleum	do.	40	2·13
Stearine	do.	70	3·78
Spices, excepting red pepper ...	do.	100	5·88
EXPORTATION.			
Cattle.			
			s. d.
Oxen and Cows	per head	1·500	6 8
Hogs	do.	800	1 4
Sheep and Goats	do.	50	2·66

Articles upon which no special duties are fixed in the Tariff, *ad valorem*, 1 per cent. Note.—Nevertheless, cereals, and the produce of the national mines, shall continue to be exempt from export duties.—Re-exportation: Articles, re-exported, on clearance outwards, *ad valorem*, 1½ per cent. All merchandise deposited in the Custom-house, the import duty on which is less than 1 per cent., *ad valorem*, shall pay, when re-exported, one-tenth of the export duty leviable on the same, as per tariff, thus modifying the 89th Article of the preliminary rules of the tariff of 1861.

BOATS AND SHIPS.—We propose to issue with the *Nautical Magazine* a series of illustrations of the build and rig of boats and ships of the present age, throughout the world. If our readers abroad will send us sketches or photographs, with written descriptions of native ships and boats, it will greatly assist us in our project.

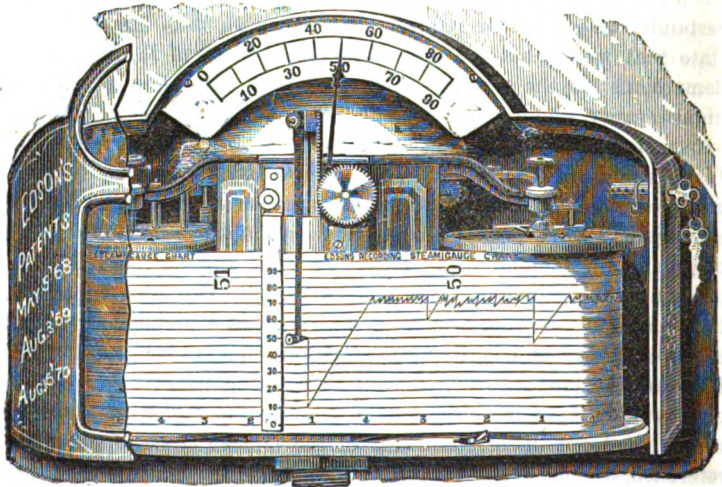
ABOUT LLOYDS.—We have received a pamphlet intitled “About Lloyds.” The writer is evidently behind the scenes, and speaks as one

having authority, and with power. His position enables him to lay facts bare, and to draw startling conclusions. We do not altogether admire the tone of the whole of the pamphlet; and we think it would have been stronger, if parts of it had been less bitter. If the pamphlet be true, fact and belief are at variance; for it would appear that, as a matter of fact, the old institution of "Lloyds" is (owing to keen competition of trade, and to the improved facilities which independent action creates) of far less importance in the underwriting world now, than the large companies, as a body are; whilst (again according to the pamphlet) it would appear that the belief of the ancient Society, as displayed by their actions of late, is unfortunately exactly the reverse of the fact. We know little of the inner workings of that world-known institution, whose committee meet at the Royal Exchange, and we have no means of gauging the wisdom or unwisdom of their acts, but we reverence it as an institution that has placed its mark on our history, as a commercial nation. Assuming, however, as we have a right to do, that "About Lloyds" is not a romance, there is probably some foundation for dissatisfaction, and certainly some need for reform. Whilst we go thus far, we distinctly state that we do not see any necessity for many of the sweeping condemnations of the writer, which we think are often too wide and unnecessarily funny. For instance, it may be possible, indeed, it is extremely probable that the Committee have erred as regards "Lloyds' List," and have lost money by it, and are losing money by it now, and will go on losing money: but that is no reason why it should be alleged, as regards Lloyds, "that comments on bubble companies and time bargains, now contend with *Holloway's Pills* and *Colman's Mustard* in relieving the tedium of mere underwriting." Our own experience is, that the outside sheet of Lloyds' List—viz., that containing the advertisements is always judiciously removed before the reader gets the "List." Pills and mustard will, therefore, if they are necessary to the comfort of underwriters, continue to be administered in the region of the domestic hearth, and not under the shade of the Golden Grasshopper; but the reference, although it tends to lighten the pages of the pamphlet, is altogether too unimportant for so grave a subject. There has for a long time been a feeling of uncertainty and uneasiness, and we fear that "About Lloyds" will not have the effect of allaying that feeling. If the object of the writer be gained, or in any way promoted—viz., the placing of the large companies on a proper footing as regards Lloyds, and the mutual placing of Lloyds on a proper footing as regards the companies and the public, "About Lloyds" will not have been written in vain, and on that account we hail it as valuable.

ANOTHER NEW LIGHT.—This is the heading of a paragraph that has been going the round of the papers, but whether the new light is one

Mr. Carl Molchin, or is a $17\frac{1}{2}$ sperm candle lamp is not easy to understand. That it cannot be the $17\frac{1}{2}$ candle lamp we have reason to believe, because there is nothing extraordinary in $17\frac{1}{2}$ candle power. We have read in the "Journal of the Society of Arts" of a lamp, burning a heavy mineral oil and a vegetable oil, which gives 50 sperm candle light, and in which the mineral oil burnt, as tested by M. Valentin, of the Royal College of Chemistry, would not throw off any inflammable vapour at the high temperature of 300° Fahrenheit. The lamp we refer to was shown at the Society of Arts as far back as the 21st December, 1870, by Mr. Albert M. Silber, of Wood Street, London.

AN AUTOMATIC REGISTERING STEAM GAUGE.—The following wood-cut represents this gauge. It has, we are informed, been adopted by the U. S. Government Inspectors for use upon steamers, &c., in conformity with the recently enacted steamboat law. The gauge is connected with the boiler by means of a pipe, which allows the steam to act upon a series of corrugated discs, arranged in pairs, which are expanded by it.



The motion thus produced is transmitted to a wheel (shown in the cut) by means of a lever. This wheel communicates motion to a rack, carrying a pencil, which marks the varying degrees of pressure upon a band of paper, which receives its motion from the same source; the drum upon the left unwinding and that upon the right winding up the band. At the side of the pencil will be seen a scale, by which the pressure momentarily recorded may be read with great convenience. With a rising pressure, the pencil marks a stroke directly upwards; when the pressure falls, a forward motion is communicated to the paper, and the recorded mark is at an angle. The record is an extremely delicate

one, the line being composed frequently of an innumerable number of slight notches, so close together as to seem a horizontal line, the cause being the slight variation of pressure at the successive strokes of the engine—a few ounces at most. The paper roll will last for many weeks, and when used up may be filed away for reference. The whole contrivance is secured by combination locks, which prevents it from being tampered with; and the case is fronted with a glass plate, to allow the engineer to inspect momentarily the condition of the steam in the boiler.

RIO DE JANEIRO.—FACILITIES FOR STEAMERS.—Decree No. 4955 of 4th May, 1872, declares the favours which steamers of the regular lines of transatlantic navigation may enjoy. “Taking into consideration what has been represented to me by various companies of transatlantic steamers that frequent the ports of the Empire, and for the purpose of so harmonising the existing law, in that part relating to the favours and facilities granted to packets and steamers of regular lines, as to avoid the doubts which commonly occur, in its execution; at the same time conciliating the interests of navigation and commerce with those of the National Treasury, I deem it fit, in conformity with the resolution of Art. 172 of the regulation 2,647, of 19th September, 1860, to decree the following:—Art. 1. The packets and steamers of regular lines established between the Empire and foreign ports shall be permitted the immediate discharge of their cargoes without being subject to the usual delay, having the preference over any other vessels, and being enabled to begin discharging cargo immediately after being visited, although they may not yet have given entry in the Custom House, whether the day be a working day or a half or whole holiday; provided, however, that the lighters employed in unloading the vessels be taken to the Custom House dock, and there remain under the fiscal precautions which the inspector may order to be taken, till the respective department shall be opened and the packages may be therein placed. Art. 2. They shall, equally, be permitted to receive cargo, be despatched, and cleared with destination to the ports of call, even before they should have finished discharging the packages which they may have to deliver in the port at which they touch; the competent fiscal authorities, however, shall not be prevented from proceeding to the visits and searches which may be necessary. Art. 3. They may keep on board the remainder of the ship's stores, without seals being placed thereon. Art. 4. The presentation of manifests shall be dispensed with from the intermedial foreign ports of Lisbon, Madeira, St. Vincent, or any others, in which the steamers may make a short stay, and at which they may have received some packages and parcels; this duty being substituted by the delivery on the first Custom House visit, of a list of the cargo which they may have received at the

said intermediary ports, distinguishing the same relatively as received from each one of the ports. Art. 5. The presentation of manifests of goods received at the ports of call of the Empire, destined for the River Plate, shall be dispensed with; it will be necessary, however, in order to fiscalize the transshipment of such merchandise, that an *employé* of the Customs of the said ports should go on board each one of the steamers, which may arrive from Europe, and after having received the cargo, deliver to the commander a certificate of the number of the articles shipped, in order that a duplicate may be sent to the capital of the said articles, and of the substitute list of the manifest. Art. 6. The captains or companies shall not be responsible for the difference found in the lists of baggage of passengers; and in the articles subject to duty which those parties may bring, unless it be proved that the captain was aware of the existence of the said articles, and did not enter them in the manifest. Art. 7. The said captains shall also be dispensed from signing a bond of responsibility on account of the transshipment or re-exportation of the packages which may go on, or be dispatched for the southern ports of the Empire, or the River Plate. Art. 8. The steamers in question may leave at any hour of the day, or night, the regulations of the police of the port being observed. Art. 9. The agents of the respective companies shall make themselves responsible for the payment of any fine or duty, which by virtue of the fiscal regulations may be owing by the commander in order to avoid delay in unloading the steamers, which, after having received the mails from the Post Office, must not be detained under any pretext whatever, in the ports of the Empire, beyond the hour fixed for their departure. Art. 10. The landing of passengers from steamers and sailing vessels, which may bring them, shall be permitted to take place the same day of their arrival, when they can do so up to half-past seven in the evening, it being likewise permitted the said passengers to bring on shore with them small travelling bags and portmanteaus with clothes for daily use; or other like packages which may not contain articles liable to pay duty, and as to the other packages of luggage, they shall be dealt with as the existing law directs. Art. 11. All other dispositions to the contrary are revoked. (Signed) VISCOUNT RIO BRANCO, Minister and Secretary of State for Finance."

DEEP-SEA THERMOMETERS, PREPARED UNDER ADMIRAL FITZROY'S SUPERINTENDENCE.—A PAPER READ BY ROBERT H. SCOTT, F.R.S.—REPRINTED FROM THE *Quarterly Journal of the Meteorological Society* FOR JANUARY 17, 1872.—In a paper by Captain J. E. Davis, R.N., "On Deep-Sea Thermometers," which has been printed in Vol. V. of the *Proceedings*, it is stated (p. 309) that "at a meeting of the Committee of the Royal Society, held in the Hydrographer's Room, in April, 1869, and at which all the appliances for deep-sea sounding were placed before them, the

plan of operation for testing the thermometers was discussed. * * *

At the time these experiments were proposed, it was not known that a thermometer had been constructed, at the suggestion of Mr. Glaisher, by the late Admiral Fitzroy's directions, with the view of removing the difficulty of pressure." The author gives a reference to a notice of the instruments in question, which is to be found in the 1st Number of *Meteorological Papers*, published by authority of the Board of Trade, in 1857, and states that some of them had been used for deep-sea purposes. I may, perhaps, be excused if I venture to remark that, in April, 1869, the history of these instruments was perfectly familiar to many gentlemen interested in the question of deep-sea soundings. The number of the thermometers of this particular pattern, which was supplied to the Meteorological Department of the Board of Trade by Messrs. Negretti and Zambra, the makers, was upwards of fifty, and they were supplied to several ships in the Royal Navy, especially those employed on certain well-known deep-sea sounding expeditions; among these I may name H.M.S. *Cyclops*, *Hydra*, *Mвина*, *Fox*, *Bulldog*, *Porcupine*, *Serpent*, *Gorgon*, *Rifleman*, *Firefly*, *Swallow*, *Archer*, *Woodlark*, *Tartarus*. I was not able to find any record of any of these thermometers having been tested in an hydraulic press, and, accordingly, as soon as the Miller-pattern thermometer had been definitely adopted by the Hydrographer, it was resolved to subject one of the old thermometers in the Meteorological Office to the same test as that which the new instruments were made to undergo, in order to see whether or not the construction of the original instruments offered sufficient security against alteration of the shape of the bulb, owing to pressure. The experiments were carried out on the 28th of September, 1869, at Mr. Casella's, in the presence of Captain Toynbee and Mr. Strachan, and the results of the testing have been published in the Report of the Meteorological Committee of the Royal Society for 1869. The concluding sentence of that notice was as follows (p. 92):—"The foregoing experiments are sufficient to show that the original thermometers, described by Admiral Fitzroy, were good and trustworthy instruments, in so far as regards their capability of resisting pressure."

REWARDS,

To Captain John Brown, master of the ship *Tantallon Castle*, of London, a chronometer from the President of the United States, for rescuing the master and crew of the American barque *May Stetson*, of New York, from the wreck of that vessel on the 5th December, 1871, and for conveying them to that port.

To Captain George W. Otis, master of the American ship *Ida Lilley*, of Richmond, a gold watch from Her Majesty's Government for his humanity to the crew of the barque *Metz*, of Belfast, whom he rescued at sea on the 29th March, 1872.

MARITIME LAW.

ADMIRALTY JURISDICTION.—INJURIES BY COLLISION.—JAMES V. LONDON AND SOUTH WESTERN RAILWAY COMPANY.—This was an appeal from a decision of the Court of Exchequer, reported in the *Nautical Magazine* for March (p. 268), whereby it was held that the Court of Admiralty had no jurisdiction to entertain the suit for limitation of liability, or to restrain the plaintiff by injunction from bringing an action to recover damages for personal injury and loss of luggage, sustained through a collision between the defendants' steamship *Normandy* and the *Mary*, inasmuch as neither the ship nor the proceeds, nor anything equivalent to the proceeds, were under arrest at the time of the institution of the suit. The Court of Exchequer Chamber unanimously affirmed the judgment of the Court of Exchequer.—(Exchequer Chamber, sittings in error, June 21.)

ARREST OF SHIP.—THE "AVA."—The Acting Attorney-General, as law officer of the Government, made an application to the Vice-Admiralty Court, Hong Kong, that its warrant, issued at the suit of the owners of the steamer *Rona*, for the arrest of the Messageries Maritimes steamer *Ava*, for damage sustained in a recent collision between the two vessels, should be set aside. He produced, in support of this application, a treaty between France and Great Britain, relating to the *status* of the mail packets of either country in the ports of the other, Article V. of which provides that, "When the packets employed by the British Post Office, or by the French Post Office, in execution of Articles I. and II. of the present convention are national vessels, the property of Government, or vessels chartered or subsidised by Government, they shall be considered and treated as vessels of war, in the ports of the two countries at which they regularly or accidentally touch, and be there entitled to the same honours and privileges. They shall not on any account be diverted from their special duty, or liable to seizure, detention, embargo, or *arrêt de Prince*." After a careful investigation of the facts, the Court ordered that the warrant should be set aside, and the *Ava* released from arrest.—(Vice-Admiralty Court, Hong Kong, May 5.)

CARRYING PASSENGERS WITHOUT CERTIFICATE.—THE "SULTAN."—Section 318 of the Merchant Shipping Act, 1854, provides that if any passenger steamer shall ply and go to sea with passengers on board, without having a Board of Trade certificate, of her fitness to carry passengers, put up in some conspicuous part of the ship, her owner shall for each such offence incur a penalty not exceeding £100, and her master shall incur a further penalty not exceeding £50. Alexander Williamson, owner and master of the *Sultan* (s. s.), was charged with violating the provisions of the above section, by plying with passengers between Bute and Glasgow, on the 13th May, without being in possession of the necessary certificate. It appeared that the vessel had been surveyed by

the Board of Trade surveyor at Greenock, on May 2, and was found completely equipped, with the exception of life buoys and lamps, then under repair. These were supplied on the 18th of May, when the vessel proceeded on her first trip, before the receipt of the certificate, which was delivered to the defendant the same day. The bench held that there was no reflection on the character of the master of the *Sultan*, and inflicted the mitigated penalty of £10 as owner, and £5 as master, with modified costs.—(Glasgow Small Debt Court, June 11.)

NON-DELIVERY OF CARGO.—THE "SAN RONAN."—In a suit established in the Court of Admiralty, for losses caused by delay, by several English merchants, as owners and consignees of a cargo of spars, to a German ship, the *San Ronan*, under an English charter-party, which contained the usual exception of "the Queen's enemies, the act of God, restraints of princes, rulers, etc." It appeared that the vessel, while proceeding on her voyage from Vancouver's Island to Queenstown, was, through the illness of her master, and damage sustained at sea, compelled to put into Valparaiso in August, 1870. The ship was ready for sea on Sept. 23, but in consequence of the war which had broken out between Germany and France, she remained at Valparaiso, which was watched by French cruisers, by the advice of the German Consul, but against the wishes of the owners of the cargo, until the 23rd December, when news arrived of the German victories and she proceeded on her voyage. The Court decided that the master of a belligerent ship is justified in exercising reasonable caution, and that as the master of the *San Ronan* had established his defence that he exercised his right of taking reasonable and prudent steps for the preservation of his ship, in refusing, under the advice of his Consul, and in all the circumstances of the case, to sail before December 23, the case must be dismissed with costs.

SHIPPING AND MERCANTILE GAZETTE CORRESPONDENCE.

(Reprinted by special arrangement with Sir WILLIAM MITCHELL.)

"AFLOAT" CLAUSE.—A vessel is chartered, under the usual form of grain charters, to call at Cork or Falmouth for orders, and to be discharged in a safe port in the United Kingdom, always afloat. Gets orders for Newry, and arrives in the Pool, Carlingford Lough, as she cannot get further, even on spring tides, until lightened. This the merchant does immediately, sufficient to come up to Newry on the next springs, and at the same time he informs the master that the days do not count until she gets there, which would be about ten days lost to the vessel. The grounds he (the merchant) relies on are—first, the Pool is not the port of Newry, but merely at the port; and, secondly, all similar-sized vessels have hitherto conceded this point to the merchants

of Newry, and have thereby made it an established custom of this port. On the other hand, the master's case is, that when the vessel came as near Newry as she could safely get with the full cargo, and bulk was broken by the merchant, the lay-days commenced, and continued to count without intermission until the vessel was finally discharged. Which is the correct view?—Lay-days commence, as a rule, from the time a vessel is at her discharging berth, or as near thereto as she can safely get. If, therefore, she enters a port, and there is not water enough to get to the berth until the top of spring tides, the lay-days do not begin until the vessel reaches that place. She may, therefore, be got safely to the customary discharging berth by taking out a part of the cargo, and then being moved to where she may lie afloat. Lord Chief Justice Tyndall held that demurrage began, not from the time a vessel entered a river, but when she got into the usual place of discharge. In the case of the *Die Perle*—"Wallis v. Burkett"—reported in this journal in 1869, and also in that of the *Neva*—"Humble v. Barber"—published in the *Shipping and Mercantile Gazette* April, 1871, it was ruled that lay-days commenced from the time those vessels were at their places of discharge, after being lightened; but the detention in performing this lightening must not be unreasonable. The merchant's views are, therefore, correct.

ALLOTMENT NOTE.—A correspondent states that a captain granted an allotment note to a seaman in favour of a minor, who was put into the union after the vessel sailed, and the parish authorities applied for payment of the note, and asks whether he is justified in paying it, and whether the signature of the relieving officer on the back of the note is sufficient?—If the allotment note was given to a seaman for the use of the minor, the signature of the relieving officer would not be a sufficient and legal discharge of the obligation. Parish authorities can claim one-half of a seaman's wages from a shipowner for the support of such seaman's wife or children. The signature of the seaman in whose name the allotment note was made should be procured, or the correspondent should be guaranteed by the parish against any claimant entitled by law to recover.

1 **GRAIN CARGO.**—A shipmaster who chartered his vessel in New York to load a cargo of wheat or Indian corn at Baltimore, in which charter the clause, "vessel to ceil and load under United States Lloyds' inspection," was erased by mutual consent, states that when he arrived at Baltimore the merchant refused to give him cargo unless the vessel was ceiled and loaded under inspection, which he was afterwards compelled to do in order to get cargo. He asks, can he claim for expense incurred, as he was not bound by charter to ceil or load under any inspection, and served the merchant with protest after the vessel was loaded?—The ceiling

clause having been struck out, the charter-party was left open in that respect; and, as it is the custom at Baltimore to ceil, the shipmaster would be compelled to do so. If, therefore, it was understood that the ceiling should be dispensed with, as between the charterer and shipowner, the expense should fall on the charterer.

SEA APPRENTICE.—What redress has a smackowner against the master of a schooner which put into Dover Roads short of a seaman, and, after shipping one of the smackowner's apprentices without consent, proceeded on his voyage?—The smackowner has no redress against the shipmaster who engaged the services of his apprentice, unless he can prove that he induced the apprentice to desert his ship. He can, however, proceed against the apprentice on the return of the vessel to England.

SQUARE RIG.—Is a brigantine-schooner counted a square-rigged vessel?—A brigantine is a schooner, brig-rigged forward, and, therefore, is a square-rigged vessel; but for the purposes of certificates, the Board of Trade have held that such hermaphrodites should be placed in the class of fore-and-aft vessels, under given circumstances.

SALVAGE SERVICE.—A ship in tow, bound to Cardiff with runners, picks up a vessel dismasted and disabled, which is towed, at the request of the captain, into a safe port. Can the crew claim a share of the salvage awarded?—The seamen engaged by the run, and forming the crew of the salving vessel, would be entitled to share in the salvage award.

MATE'S LIABILITIES.—A mate, after perusing the foregoing question and reply, asks if he would be liable for the cargo under the following circumstances:—On the vessel arriving at the port of discharge he was ordered to remove his bedding, give up his keys, provide himself with lodgings, and live on shore about a mile and a half from the ship. He was to be paid so much per week until the discharge was completed, but his wages due were refused. To have kept tally, therefore, he must have gone entirely without provisions, at the same time be responsible for the contents of a ship in which he was not allowed to remain; and is informed that, under the circumstances stated, it is improbable that any Court would order the payment of the deficiency in timber cargo.

HYDROGRAPHIC.

COAST OF PERU.

Information has been received that the captains of the Pacific Steam Navigation Company's vessels *Inka* and *Quito* report the sea as breaking over a sunken danger, lying to the northward of Salinas point, not marked on the charts, and named the *Misteriosa* rock.

Misteriosa Rock lies midway between Salinas and Baja points, nearly

one mile off shore, and on the following bearings: mount Salinas N.E. by E., point Baja N. $\frac{1}{2}$ E., and point Salinas S.S.E. $\frac{1}{4}$ E.

These bearings place the rock in lat. $11^{\circ} 16' S.$ and long. $78^{\circ} 40' W.$

As the Misteriosa rock lies nearly in the track of vessels bound from Callao to Huacho, care should be taken when passing its neighbourhood to preserve a proper offing.

COAST OF BOLIVIA.

Port Antifogasta, hitherto unknown, but now used as a place of export for nitrate as also silver ore from the Bolivian mines, and therefore likely to become of some importance, lies between mount Moreno and Jara head, about $3\frac{1}{2}$ miles to the southward of Chimba bay; its approximate position being in lat. $23^{\circ} 36' S.$, long. $70^{\circ} 27' N.$

Antifogasta should be approached with caution on account of the detached rocks off the port, on one of which the Pacific Steam Navigation Company's vessel *Payta* struck in 1872.

Captain Hammill of the Pacific Steam Navigation Company's vessel *Lusitania* remarks that there is anchorage for large vessels about $1\frac{1}{2}$ miles from the mole of this port, while small vessels may anchor and load to 18 feet within a creek entered by a contracted passage. Three vessels were loading in this creek at the time of the *Lusitania's* visit.

NORTH-WEST COAST OF BORNEO.

The following account of some outlying shoals on the north-west coast of Borneo has been received from Captain W. Arthur, R.N., of H.M.S. *Iron Duke*, 1872.

During the passage of H.M.S. *Iron Duke* from Singapore to Labuan, soundings were obtained in 5 fathoms in lat. $5^{\circ} 5' N.$, and long. $114^{\circ} 40' E.$, about $4\frac{1}{2}$ miles N.N.W. of the Bruni patches with the eastern extreme of the Bruni cliffs, bearing S.E. $\frac{3}{4}$ E.

Information was also received from the captain of a vessel trading between Labuan and Singapore, of a similar patch about 16 miles to the north-east of that found by the *Iron Duke*, reported to be in latitude $5^{\circ} 18' N.$, and long. $114^{\circ} 53' E.$ This position was determined from cross bearings of Ruraman Island and Mount Pisang.

Commander George Robinson, of H.M.S. *Rinaldo* also reports, that during the passage from Labuan to Manilla, when about 21 miles from the coast of Borneo, the leadsman suddenly got soundings in 7 fathoms decreasing to 5 fathoms, the bottom being distinctly visible, and discoloured water seen from the masthead to the northward.

From this shoal water the west extreme of Gaya island bore S. $\frac{1}{2}$ E., and the mountain of Kini Balu S.E. by E. $\frac{1}{2}$ E., the depth of 5 fathoms being in lat. $6^{\circ} 26' N.$, and long. $115^{\circ} 56' E.$

GULF OF SIAM.—BANGKOK RIVER.

The following information relating to the rivers Bangkok and Tachin,

at the head of the Gulf of Siam, has been received from Navigating Sub-Lieutenant James S. Barrett, of H.M.S. *Teazer*, Commander Richard M. Blomfield, R.N.

Variation 2° 10' Easterly.

Me-Nam Chau-Phya or Bangkok River.—The look-out house on the west point, and red house in the river, given as leading marks, have disappeared. The course given from the fishing stakes on Admiralty chart, No. 999, is stated by the pilots to be one which would now lead a vessel on shore, the course steered by the pilots is about N.E. $\frac{3}{4}$ N., instead of N.E. by E., hauling gradually to the northward, as soon as the west point bears N.W.

Tachin River.—The mouth of this river lies about 20 miles to the westward of the Bangkok river; it was navigated for about 35 miles by H.M.S. *Teazer*, in November, 1871; this river has a similar bar to that of the Bangkok river, but the entrance is more difficult to distinguish, the land in the neighbourhood being low, and covered with trees.

In clear weather the high land of Bang-pasoi brought to bear E. by S., will lead to a position off the bar, which may be crossed on a N.N.W. course. Tachin river has about the same general depth, and is of the same general width as Bangkok river.

The *Teazer* anchored off Maconchisi in lat. 13° 39' N., and long. 100° 11' E., nearly 35 miles from the mouth of the Tachin. At Maconchisi are the new mills of the Indo-Chinese Sugar Company; the sugar is at present sent in barges by canal to Bangkok, but it is expected that vessels will shortly navigate the Tachin river as easily as they now do the river Bangkok, whereby an expensive freight will be saved.

JAMAICA.—PORT ROYAL AND KINGSTON HARBOURS.

The following additions to the Sailing Directions for proceeding from Port Royal to the anchorage off Kingston have been received from Staff Commander Joseph G. Dathan, R.N., of H.M.S. *Royal Alfred*, 1872.

The Narrows.—The northern side of the narrow channel near Fort Augusta separating Port Royal and Kingston harbours is marked by black piles, and the southern side by white piles; it has, however, been remarked that the pelicans frequenting the neighbourhood soon colour the piles alike.

Directions from Port Royal to Kingston.—In proceeding from Port Royal to Kingston the mark to run into the channel is Helshire point just open of Small point bearing S.S.W. $\frac{1}{2}$ W., or Fort Augusta beacon bearing N. $\frac{1}{2}$ E., until the centre of Lindo's House—standing in the interior on the northern shore—comes in one with the centre of the lower red-topped house, called Old Greenwich Hospital, bearing N.E. $\frac{3}{4}$ E., which mark will lead into the Narrows. Upon nearing the elbow or No. 18 pile, the upper house must be opened entirely to the left of the

lower one, or to appear exactly half way between the lower one and another white house left of it; this leads past the elbow in not less than 42 feet; then the two houses may be brought again in line, and when Gallows point comes on with the coal stores at Port Royal yard, haul round towards Kingston.

Vessels turning through the Narrows and nearing the elbow or No. 13 pile, should be careful not to open the centre of Lindo's House to the eastward of the centre of the red-topped house at Greenwich, and should not stand into less than 27 feet on either side. The centre of the two houses in line leads very near the edge of the bank at the elbow in not less than 23 feet, but the least deviation beyond would lead on the bank in 13 or 14 feet, and it is here so many vessels get on shore with the two houses still in line, or at least not open.

A guide for running up to Kingston is the fall of Yallahs hills (towards the coast), seen over the sudden rise of the bush on the Palisadoes:—for running down, and after having passed the pile off Creek pond, a bushy cay (just north of Fort Augusta) to be brought in line with a large straggling cotton tree on the low land towards Spanish town. These are the marks used by the black pilots, but are hardly necessary.

Kingston.—The English church at Kingston may be known by a brick tower and small wooden spire. The new market place is built of iron, and its wharf, situated in the middle of the town, forms the best landing place at Kingston.*

HAITI OR SAN DOMINGO.

Loos Shoal and Leighton Rock.—These dangers, reported as lying to the south-east of Cayes bay, the Loos Shoal in lat. $17^{\circ} 45'$ N., long. $74^{\circ} 30'$ W.; the Leighton rock, in lat. $17^{\circ} 37'$ N., long. $73^{\circ} 21'$ W. have lately been searched for by H.M.S. *Philomel* and *Plover*, under the orders of Commander Douglas Walker, R.N. (April 1872).

These vessels spent respectively eighteen and fourteen days sounding on and near the assigned position of these reported dangers; no bottom was found near the above position of the Loos shoal with 450 fathoms of line, or near the position of the Leighton rock with 690 fathoms.

Commander Walker reports that both the Loos shoal and Leighton rock are imaginary dangers; and they have, consequently, been removed from the charts.

SOUTH AFRICA—BETWEEN CAPE OF GOOD HOPE AND NATAL.

Struys Point.—In consequence of the disastrous wrecks that have recently taken place in the neighbourhood of Struys Point near Cape

* *Plum Point Light.*—A light is shown from this lighthouse in the direction of the Harbour Master's office at Kingston, on a bearing of about N. by W. $\frac{1}{2}$ W., to enable a watch to be kept on the light; this has led to the belief that the limiting N.W. line on the chart is incorrect, the light having been seen from off Kingston.

Agulhas, and of the reported inaccuracies of the existing charts and sailing directions; a close examination of the coast and outlying dangers from Struys Point to Hoop Point, including the Atlas Reef, has been made by Navigating Lieutenant W. E. Archdeacon, of the Admiralty Survey, in H.M.S. *Dido*, Captain William C. Chapman, R.N.

Navigating Lieutenant Archdeacon reports as follows:—

On the 8th of March, 1872, the *Dido* arrived off Struys Point and was anchored in 23 fathoms, with the beacon which is built on that point close to the high water mark of spring tides, bearing N.N.W., distant 2.9 miles.*

From Struys point a chain of reefs extends a distance of $1\frac{1}{2}$ miles to the S.S.E. On the outer detached rock which is locally named the Blinder, 18 feet at low water was found, with 4 to 6 fathoms close to the rock, and 7 to 9 fathoms extending a distance of 4 cables to seaward. This Blinder rock (in close proximity to which Lieutenant Archdeacon was placed by the fishermen of the district,) lies S.S.E., distant 1.8 miles from the beacon on Struys point.

Northward, in the direction of Struys point, 8 cables from the Blinder rock is the Bulldog or Saxon reef, with 12 feet on it at low water, and 8 fathoms close to it, but with shoal ground (about 4 fathoms) between it and the Blinder rock.

Between the Bulldog reef and Struys point, the chain of reefs are shoal and extensive, with boat passages between in fine weather.

In standing towards these dangers from the south-east, the Agulhas light will become invisible on a bearing of W. $\frac{1}{4}$ N., that line of direction passing more than 3 cables to the southward of the Blinder reef.

The experienced fishermen of the locality who assisted Navigating Lieutenant Archdeacon in his examination, all agreed as to the Blinder rock being the outer danger from Struys point; from this fact, and the close examination made at the time, as also from observations made during a south-east gale—which afforded a good opportunity for deciding the extent of the breakers—it is certain that the limits of the dangers extending from Struys point as above described are accurately defined, and that there is no foundation for the report that these reefs are found at a distance of 6 miles from the shore.†

* A stone beacon 34 feet high, 10 feet square at base, and 6 feet at top, surmounted by a copper ball 4 feet in diameter, has been erected on Struys point. The beacon is coloured red to seaward, with red and white bands on the east and west sides, and is built about 2 feet above high water spring tides.

† Navigating Lieutenant Archdeacon remarks, that it is certain that the vessels which have been recently wrecked in this locality struck on, or in the vicinity of the Bulldog or Saxon reef. In the case of the *Benefactress* it was stated that the lighthouse was invisible, and in that of the *Saxon* that they opened the light a few minutes after hauling to the southward to get clear of the reef on which the vessel had struck; which would agree with the inshore limit of the light on Cape Agulhas, as given in the charts.

The fishermen also state that the whole of this line of coast, from Struys point towards Martha point and to the eastward, is fringed with a series of reefs, with depths varying from 4 to 6 fathoms, which break in heavy weather; there are passages between the reefs and deeper water inside of them.

The wind freshening from the south-west after the above examination, the *Dido* weighed and found good shelter to the eastward of Struys point where she anchored in 11 fathoms; the beacon on the point bearing West distant $1\frac{1}{2}$ miles.

The *Atlas Reef* was next examined, and found to lie 1.4 miles from the coast with Struys point beacon bearing W. $\frac{1}{2}$ S. distant nearly 7 miles.

Although assisted by fishermen of the locality, the reported shoalest part of 8 fathoms was not found, nothing less than 5 fathoms being obtained; the extent of the Atlas reef was however determined, and another rock with 4 fathoms named the Miles Barton discovered at a distance of about 6 cables from the Atlas reef in the direction of Struys point.

The bearing of the conical peak (N.W. $\frac{1}{4}$ W.) and distance of Struys point (7 miles) as given in the African Pilot, page 48, nearly agrees with the position of the Atlas reef as now determined.

In the third paragraph of page 48 of the African Pilot, vessels are cautioned not to approach this part of the coast nearer than 7 miles, at which distance they will find 20 fathoms; Lieutenant Archdeacon recommends, particularly when westward of the Atlas reef, that vessels should not under any circumstances, at night, approach within a depth of 40 fathoms.

St. Francis Bay.—The Cockscomb mountain given as a distinguishing mark for St. Francis bay, bears N.N.E., distant 98 miles from cape St. Francis, instead of N.E. $\frac{1}{4}$ N., distant 80 miles as stated, in the African Pilot, page 55.

St. John River.—*Bismarck Rock.*—This rock, on which the steam vessel *Bismarck* struck, on 29th December, 1871, and described in Notice to Mariners, No. 24, of 1872, has been examined by Navigating Lieutenant Archdeacon, and found to lie one-sixth, instead of three-quarters of a mile from the shore.

This rock has not more than 6 feet on it at low water springs, with deep water between it and the shore. From the Bismarck rock, cape *Hermes* bears W. $\frac{3}{4}$ S. distant 2.6 miles.

Caution.—The coast between the Bashee and Umcomass rivers is fringed with outlying rocks for a distance varying from 1 to 5 cables from the shore.

The following is an account of shoal banks discovered by the French

transport *La Rance*, commanded by Lieutenant Chevalier, during her passage from Tahiti to New Caledonia:—

La Rance Banks.—On the 27th of January, 1872, at 10h., a.m., the *La Rance* was running at the rate of 9 knots, with a fresh breeze from the south-east, when a sudden change in the colour of the sea was observed. The ship was hove to, a boat lowered, and an officer sent to sound, $3\frac{1}{4}$ fathoms, then 12, 22, and 16 fathoms were found on a bank, which appeared to extend 4 miles in a north and south direction. When the *La Rance* crossed the western part of this bank, the look-out man reported a large bank about 9 miles to the north-west, with the sea breaking over it; a lagoon was observed at its north-east end. A third shoal bank was also seen about 2 miles northward of the *La Rance*; there appeared to be less water on this bank than on that which was sounded over; and, lastly, a fourth bank was observed about 11 miles to the southward, which appeared to have a greater depth. The position of the depth of $3\frac{1}{4}$ fathoms, deduced from the noon observations of the *La Rance*, was determined to be in lat. $24^{\circ} 18' S.$, and long. $176^{\circ} 1' W.$

Discoloured Water.—On the 31st of January, 1872, the *La Rance* passed near a patch of discoloured water, which appeared to extend north and south for about 6 miles; it was estimated to have a depth of from 8 to 11 fathoms, and was placed by observation in lat. $24^{\circ} 11' S.$, and long. $172^{\circ} 54' E.$

CHARTS, ETC., PUBLISHED BY THE HYDROGRAPHIC OFFICE, ADMIRALTY,
Sold by J. D. POTTER, 81, Poultry, E.C.

No.	Scale.		s.	d.
533	m = 1.45	British Guiana, Georgetown, and mouths of the Demerara and Essiquibo rivers	2	6
202	m = 1.75	Adriatic, Port Pola, and Brioni islands, with plan of Port Veruda	1	6
753	m = 0.2	Persian Gulf entrance	2	6
190	m = $\left\{ \begin{array}{l} 2.9 \\ 3.9 \end{array} \right\}$	Mediterranean, Girgenti, and Catania ports	1	6
2857	m = 0.9	United States, Potomac river... ..	2	6
197	m = 0.4	Mediterranean, Sicily, Palma to Catania	2	6
271	m = 1.45	Newfoundland, Cape Onion to Hare bay, with plans	2	6

BOARD OF TRADE INQUIRIES AT HOME.

38. *Thames*, of Shields, stranded on the island of Alderney, 28th May. Inquiry ordered 24th June, and held at Tynemouth on the 5th and 6th July, before J. F. Spence and J. Robinson, Esqs., J.P., with Captains Harris and Prowse, R.N. as N.A. Master in default. Casualty occurred from not making a proper use of lead in a thick fog. Certificate suspended for six months.

39. *Norwich* (s.s.), of Swansea, foundered in lat. 25° N., long. 20° W., 10th May. Inquiry ordered 4th July, but subsequently abandoned.

INQUIRIES ABROAD.

40. *Challenger*, stranded on a rock to the N.E. of the island of Batag, 30th January. Inquiry held at Manila, before S. T. Picketts, Esq., Consul, A. L. Laken and W. W. Webster, master mariners. Court inclined to view the wreck as the result of accident.

41. *Nant-y-glo*, of London, stranded at East London, 26th April. Inquiry held at East London, before the resident magistrate, with the Harbour Master as N.A. Vessel lost by stress of weather. No blame attached to the mate. Master was on shore at the time.

42. *May*, of Freemantle, stranded at Champion Bay, 9th March. Inquiry held at Freemantle, before G. Eliot, Esq., H.M. Customs, and D. H. Scott, Esq., assistant justice. Master in no way to blame. Casualty caused solely by violence of wind and waves.

43. *Rhea Sylvia*, stranded on the Macaras Reef, 29th April. Inquiry held at Nassau, N.P., before E. B. A. Taylor, Esq., J.P., and T. T. Phillips, R.N. Casualty accidental.

44. *Calabar*, abandoned at sea on or about 4th May. Inquiry held at Boston, U.S.A., before C. A. Henderson, Esq., Consul, R. McDewall, and W. Sinclair, master mariners. Abandonment justifiable.

45. *Mary le Blac*, stranded at Castle Island Reef, Bahamas, 2nd May. Inquiry held at Bahamas, before J. H. Minns, Esq., resident justice. Casualty occurred in consequence of the hazy state of the weather.

46. *Fred Warren*, of Liverpool, lost main and mizen masts in lat. 28° 30', long. 47° 25' E., 20th February. Inquiry held at Port Elizabeth, before A. Wylde, Esq., C.C. & R.M., President, with F. Skead, Esq., harbour master, as assessor. No blame attached to master. Loss due to state of weather.

47. *Susan Pardew*, of London, stranded in Great Beak River, Mossel Bay, 28th April. Inquiry held at Mossel Bay, before E. C. Crockett, R.N., resident magistrate. Error of first mate in not keeping well to windward. Certificate suspended for six months. Master was on shore at the time.

48. *Clyde*, of London, on fire in lat. 30° 40', long. 22° 45', 2nd of

May. Inquiry held at Cape Town, before J. C. Rivers, Esq., resident magistrate, and H. Wilson, Esq., port captain. No blame attached to master. The fire being the result of spontaneous combustion.

49. *Nyassa*, of Glasgow, stranded at Klapper Island, 12th March. Inquiry held at Singapore, before F. Snowden, Esq., senior magistrate; H. Ellis, Esq., acting master attendant, and J. L. Kirk, Esq., Lloyds' surveyor. Master exonerated. Every means being taken to save the vessel.

50. *Polar Star*, of St. Ives, stranded at Formosa, 30th March. Inquiry held at Pagoda, before C. Carroll, Esq., Vice-Consul; Hon. F. R. Sandilands, R.N.; R. Robinson, Esq., master mariner; and J. C. Saunders, Esq., marine surveyor. Master in default. Casualty occurred through not taking soundings. Certificate suspended for three months.

51. *Kingdom of Belgium*, of London, stranded at Madras, 2nd May, 1872. Inquiry held at Madras, before Captain T. Weldon, magistrate, and Lieutenant H. Morland, Indian Navy. Master was exonerated, though the Court was of opinion that precaution should have been taken earlier.

52. *Invereshie*, of London, stranded at Madras, 2nd May. Inquiry held at Madras, before Captain T. Weldon, magistrate, and Lieutenant H. Morland, Indian Navy. Want of precaution. Certificate suspended for fifteen months.

53. *Hotapur*, of Newcastle, stranded at Madras, 2nd May. Inquiry held at Madras, before Captain T. Weldon, magistrate, and Lieutenant H. Morland, Indian Navy. Want of precaution to meet bad weather. Certificate suspended for ten months.

54. *Sir Robert Seppings*, of London, stranded at Madras, 2nd May. Inquiry held at Madras, before Captain T. Weldon, magistrate, and Lieutenant H. Morland, Indian Navy. Want of precaution. Master's certificate suspended for ten months, mate's for three months.

55. *John Scott*, of London, stranded at Madras, 2nd May. Inquiry held at Madras, before Captain T. Weldon, magistrate, and Lieutenant H. Morland, Indian Navy. Casualty unavoidable, every precaution having been taken.

56. *Armenian*, of London, stranded at Madras, 2nd May. Inquiry held at Madras, before Captain T. Weldon, magistrate, and Lieutenant H. Morland, Indian Navy. Absence of proper precaution. Certificate suspended for ten months.

57. *Burlington*, of London, stranded at Madras, 2nd May. Inquiry held at Madras, before Captain T. Weldon, magistrate, and Lieutenant H. Morland, Indian Navy. Master's certificate suspended for ten months, having failed to join his ship. Chief mate exonerated, having taken every precaution in absence of master.

58. *Ardbeg*, of London, stranded at Madras, 2nd May. Inquiry held at Madras, before Captain T. Weldon, magistrate, and Lieutenant H. Morland, Indian Navy. Having been cut down by a native barque, as a last resort, was run on shore. Master drowned.

ROYAL NAVY AND ROYAL NAVAL RESERVE.

Abbreviations.—Ad., Admiral; A., Assistant; C., Captain; Cr., Commander; C. Chief; Cl., Clerk; Ch., 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.

PROMOTIONS.—**L.**—Robert H. Archer, 1871. **C. E.**—William Ironmonger, 1861. **St. Sn.**—William Richardson, 1867.

APPOINTMENTS.—**Ad.**—Charles Farrell Hillyar, C.B., 1867, to Pacific Station. **C.**—Edward H. L. Ray, 1866, to *Tenedos*. **St. C.**—Jabez Loane, 1869, to Chatham Dockyard. **Cr.**—Edmund L. Green, 1868, to Coastguard. **L.**—William Neilson, 1866, to *Northumberland*; George P. C. Gray, 1869, Edward W. Hodgkinson, 1872, and Walter W. Poynder, 1863, to *Excellent*; Eustace Rooke, 1866, to *Resistance*; Francis R. Brownlow, 1863, and Henry C. Bigge, 1869, to *Tenedos*; Edward D. Law, 1861, to *Coquette*, in command; Frank Rougemont, 1863, to *Helicon*, in command; William Parsons, 1860, to *Minstrel*, in command; Alvin C. Corry, 1871, to *Swiftsure*; John H. Rainer, 1869, to *Northumberland*; Frederic R. Boardman, 1864, to *Repulse*, as Flag Lieutenant; William C. Haynes, 1870, to *Repulse*, additional for disposal; Charles Lindsay, 1871, to *Northumberland*; Andrew R. Gordon, 1871, to *Research*; Benjamin D. Acland, 1868, to *Tenedos*; John E. Greenhow, 1866, to *Favourite*; Charles E. Gissing, 1863, to *Glasgow*, additional; Charles R. Arbuthnot, 1871, to *Research*; Francis C. Brown, 1869, to *Sultan*; Allan R. Woodriff, 1871, Richard W. White, 1872, and William E. Black, 1871, to *Cambridge*; Robert W. Davis, 1864, to *Endymion*. **S. L.**—Hon. Assheton G. Curzon-Howe, Alexander K. Woodrow, and Fritz H. E. Crowe, to *Victoria and Albert*; James H. P. Galloway, to *Repulse*, supernumerary; Edward Ponsonby and William Wright, to *Repulse*; Charles W. Reeve, to *Tenedos*; Henry Crawford and Ernest C. Hobkirk, to *Bellerophon*; Anthony Gwyn and Alfred R. Simms, to *Minotaur*; John Griffin, to *Northumberland*; Frederick S. Pelly and Thomas H. S. Robertson, to *Tenedos*; Gerard J. Capes and Arthur H. Stone, to *Repulse*. **N. S. L.**—George A. Warleigh, to *Tenedos*; Charles F. Barnard, to *Malabar*. **M.**—Francis J. O. Thomas and George L. B. Bennett, to *Repulse*; Henry J. Morgan and Rowland E. Berkeley, to *Tenedos*. **N. M.**—Arnot Henderson, to *Tenedos*; Arthur Edward Saul, to *Swiftsure*. **C. E.**—Robert J. Wilson, 1861, to *Repulse*; Thomas Witt, 1870, to *Tenedos*; George L. D. P. Keeling, 1871, to

Research. E.—Robert Findley, 1866, John Baillie, 1868, Henry Brown (6), 1867, and Alexander F. M'Intyre, 1866, to *Repulse*; Joseph Wyllie, 1865, and George Quick, 1867, to *Tenedos*; Thomas Russell, 1867, to *Pembroke*. **1st Class A. E.**—William E. Beal, 1870, to *Repulse*; Thomas S. Stanlake, 1870, to *Favourite*. **2nd Class A. E.**—William Hoyten, 1871, *Swiftsure*. **Cn.**—Rev. Alexander Nicolls, 1872, to *Audacious*; Rev. George C. Waller, M.A., 1871, to *Flora* (additional for Ascension.) **D. I. of H. and F.**—William T. Domville, 1866, to *Royal Adelaide*, for temporary service at Royal Hospital, Stonehouse. **St. Sn.**—Arthur W. Babington, 1866, to *Repulse*; Robert Irvine, 1870, to *Pembroke Dockyard*; George Duncan, M.D., 1869, to *Royal Marines*, Portsmouth. **Sn.**—John W. S. Meiklejohn, M.D., 1864, to *Valiant*; Charles H. Slaughter, 1867, to *Tenedos*; Duncan Hilston, M.D., 1865, to *Pembroke*, for *Yarmouth Hospital*; William H. Cruice, 1863, to *Aboukir*. **A. Sn.**—William J. Rankin, M.D., to *Lynx*; George Curtis, 1861, and Frederick A. Nixon, 1871, to *Repulse*; William C. Sandys, 1871, to *Tenedos*; John A. Robertson, 1870, to *Boscawen*; William P. M. Boyle, 1867, to *Royal Adelaide*. **P.**—John Donald, 1853, to *Swiftsure*; Alexander Allen, 1860, to *Indus* additional, for *Tenedos*; Edward W. W. Millman, 1854, to *Repulse*; Alfred T. D. Nettleton, 1866, to *Blanche*; Charles Leigh, 1866, to *Pylades*. **A. P.**—John A. Wood, 1870, to *Repulse*; Charles J. Pawsey, 1867, to *Excellent*; Arthur S. Ramsay, 1864, to *Malabar*; Charles Cock, 1869, to *Valiant*; Richard G. Chandler, 1863, to *Spartan*; Augustus A. Lyne, 1864, to *Ariadne*; Robert L. Dymott, 1871, to *Repulse*, as secretary's clerk; Charles G. Johnston, 1868, to *Northumberland*; William C. Pullen, 1869, to *Royal Alfred*; Harry W. Minty, to *Duke of Wellington*. **Cl.**—William S. Andrews, to *Repulse*; Samuel R. Warn, to *Tenedos*; Henry N. Harvey, to *Resistance*; Herbert E. Rudge, to *Himalaya*, as assistant paymaster; Walter Parnell, as secretary's clerk to Rear Admiral Macdonald; Bouchier B. Saville, to *Aboukir*. **A. Cl.**—William Le J. Pullen, to *Royal Adelaide*, supernumerary; Henry J. B. Montgomery, Joseph Green, and H. M. Irwin, to *Duke of Wellington*, as supernumeraries.

RETIREMENTS.—C.—R. Hall, 1855, C.B. **St. C.**—Stephen Spain, 1867, as Captain. **Cr.**—Henry W. Mist, 1863. **L.**—John J. C. Small, 1863, as Commander; Francis C. de Lousada, 1862, as Commander; Charles T. Williamson, 1855, as Commander; Thomas W. Oliver, 1854, as Commander; David M'Donald Smith, 1866. **N. L.**—John W. Morris, 1867. **C. E.**—John M'Kie, 1853. **St. Sn.**—William R. Dalton, 1862.

DEATHS.—C.—Stephen V. Spain, 1872, *r.* **Cr.**—Arthur B. Kingstown, 1864, *r.* **L.**—Frederic T. W. Passy, 1870. **S. L.**—Robert Mc. A. Sparrow, 1871. **N. M.**—Henry F. P. Sill. **P.**—James B. M'Avoy, 1858.

MONTHLY ABSTRACT OF NAUTICAL NOTICES.

No.	PLACE.	SUBJECT.
124	AUSTRALIA—Victoria—Port Fairy	Establishment of a Harbour Light.
125	AUSTRALIA—New South Wales—Wollongong	Establishment of a Harbour Light.
156	AUSTRALIA—New South Wales—Clarence River	Alteration in Pilot Station Lights.
137	AUSTRALIA—New South Wales—Richmond River	Additional Pilot Station Light.
128	AUSTRALIA—New South Wales—Tweed River	Establishment of a Pilot Station Light.
129	AUSTRALIA—New South Wales—Port Stephens	Establishment of a Harbour Light.
130	ENGLAND—East Coast—Flamborough Head	Alteration in Light.
131	CENTRAL AMERICA—West Coast—Acajulta	Establishment of a Harbour Light.
132	CENTRAL AMERICA—West Coast—Libertad	Establishment of a Harbour Light.
133	ADRIATIC—Lesina Channel—Peoognidol Rock	Establishment of a Light.
134	SULU ARCHIPELAGO—Basilan Groupe	Discovery of a Rock.
135	SULU ARCHIPELAGO—Teombal Island	Supposed alteration in position.
136	SOUTH AMERICA—West Coast—Messier Channel - Indian Reach	Discovery of a Rock.
137	WEST INDIES—Virgin Islands—St. Thomas Harbour	Re-establishment of Harbour Light.
138	NORWAY—Christiana Fjord—Torbiornskloer Rock	Proposed Establishment of a Light.
139	UNITED STATES—Long Island Sound—Little Gull Island	Alteration in Fog Signal.
140	UNITED STATES—Long Island Sound—Falkner Island	Establishment of Fog Signal.
141	UNITED STATES—Lake Huron—Detour Light- house	Establishment of a Fog Signal.
142	ST. LAWRENCE GULF—Chaleur Bay—Carleton Point	Establishment of a Light.
143	CALIFORNIA—Point An6 Nuevo	Establishment of a Fog Signal.
144	CALIFORNIA—Point Bonita Lighthouse	Establishment of a Fog Signal.
145	AUSTRALIA—Gulf of Carpentaria—Maria Island	Discovery of a Reef off.
146	AUSTRALIA—Victoria—Gabo Island	Alteration in Light.

NAUTICAL NOTICES.

124.—AUSTRALIA.—Victoria.—Port Fairy.—A fixed green light, visible 3 miles, is now exhibited from the end of the jetty, and is visible between the bearings south and W.S.W., the latter bearing clearing the buoy off the foul ground to the northward of Griffith island lighthouse.

Note.—Vessels entering Port Fairy should not steer in until the green light on the jetty is opened out, when steer for it and anchor. The best

anchorage is in about 8 fathoms, about a cable north-west of the black buoy of the foul ground, with Griffith island light bearing S.S.E.

125.—AUSTRALIA.—*New South Wales*.—*Wollongong*.—A *fixed red* light, visible between the bearings S.S.W. and W. by N. $\frac{1}{2}$ N., is now exhibited 56 feet above high water on the extremity of the breakwater.

Note.—Vessels making Wollongong must sight the light, and then stand in towards it. When the port is neared, in rounding the breakwater, the light will be lost sight of, and will be again seen as a guide into the basin.

126.—AUSTRALIA.—*New South Wales*.—*Clarence River*.—The red shade is removed from the lamp at the pilot station on the river head; the light is consequently a white light, which should be seen 6 to 8 miles.

127.—AUSTRALIA.—*New South Wales*.—*Richmond River*.—An additional light is exhibited at the pilot station on the Heads; two white lights will, therefore, be exhibited from this station; they lie W.N.W. and E.S.E. from each other, and are 150 feet apart; they should be seen 6 to 8 miles.

128.—AUSTRALIA.—*New South Wales*.—*Tweed River*.—A white light is exhibited at the pilot station on Fingal head, visible 6 to 8 miles.

129.—AUSTRALIA.—*New South Wales*.—*Port Stephens*.—A light is now exhibited on Nelson head; it will show *white* seaward, is eclipsed over the entrance shoal, is *red* within, after the shoal is passed, and when Nelson head can be steered for, and is again *white*, when Nelson head is passed; it can then be used as a guide for anchoring or proceeding further into Port Stephens; in clear weather, the light can be seen from a distance of 9 miles.

Note.—Vessels seeking shelter in Nelson bay can run for the harbour light (white) until the revolving light on Point Stephens is lost sight of, when it will be necessary to alter course to N.N.W., until the harbour light is lost sight of, and again made out red; a course can then be shaped for it, and when the head is passed, the white light will re-appear.

130.—ENGLAND.—*East Coast*.—*Flamborough Head Light*.—The interval of revolution has been changed from a flash every two minutes to a flash *every half minute*.

131.—CENTRAL AMERICA.—*West Coast*.—*Acajulta, or Sonsonate Roads*.—A *fixed white* light, visible 7 miles, is now exhibited at the extremity of the iron mole, and a buoy has been moored 50 yards from the mole, on each side, to facilitate communication.

Note.—To clear the dangers off Remedios point, do not bring the light to bear to the northward of N.N.E. $\frac{1}{2}$ E.

132.—CENTRAL AMERICA.—*West Coast*.—*Libertad*.—A *fixed white* light is exhibited from the western angle of the Custom House; it is obscured

by a building between the bearings N. by W., and N.N.W. $\frac{1}{2}$ W. It should be seen 6 miles.

133.—ADRIATIC.—*Lesina Channel*.—*Pecognidol Rock*.—A fixed red light, elevated 76 feet above the sea, and visible 7 miles, is exhibited from a lighthouse, recently erected on this rock, as a guide to the east entrance of Lesina channel and Port Lesina. Position, lat. 43° 8' N., long. 16° 27' E.

134.—SULU ARCHIPELAGO.—*Basilan Group*.—A rock has been discovered in the passage between the Basilan and Sulu groups.

The *Wilhelmina Rock* is partially covered with sand, and is awash at high water, with no bottom at 30 fathoms near it. Position, lat 6° 25' N., long. 121° 22' E.

135.—SULU ARCHIPELAGO.—*Pangutarang Group*.—*Teomabal Island*.—It is said that this island lies N. by E. 7 miles from the position assigned to it on the chart, and that the reefs on the north side of the island extend .2 miles in a N.N.E. direction.

136.—SOUTH AMERICA.—*West Coast*.—*Messier Channel, Indian Reach*.—The French steam frigate *Vaudreuil* has discovered a rock in the Indian reach of the Messier channel.

The rock, *Vaudreuil rock*, is nearly awash, with from 4 $\frac{1}{2}$ to 7 $\frac{1}{2}$ fathoms on the edge of the kelp round it. It is a northerly extension of a group of islets and dangers lying mid-channel in the reach, southward of the Gorgon reef. Position of Vaudreuil rock, lat. 49° 18' S., long. 74° 22' 50" W.

Note.—To avoid this danger, vessels should keep near the shore of Wellington island.

137.—WEST INDIA.—*Virgin Islands*.—*St. Thomas Harbour*.—A new harbour light is now exhibited from an iron lighthouse on Mohlenfels point. The light is a fifth order light, 118 feet above the sea, and should be seen 12 miles.

138.—NORWAY.—*Christiania Fiord*.—At the close of the summer a fixed white light with two red flashes following each other in quick succession, of the third order, will be exhibited on Torbiörnskier, east side of the entrance of the fiord. Further information is promised.

139.—UNITED STATES.—*Long Island Sound*.—*Little Gull Island*.—The fog signal at the lighthouse will in future be a "siren," which will sound blasts of five seconds duration, with intervals of forty seconds.

140.—UNITED STATES.—*Long Island Sound*.—*Falkner Island*.—A fog bell, struck by machinery at intervals of fifteen seconds, has been established at the lighthouse, and will be sounded during thick and foggy weather.

141.—UNITED STATES.—*Lake Huron*.—*Detour Lighthouse*.—A steam fog whistle has been established which in thick or foggy weather will sound a blast of ten seconds duration with intervals of fifty seconds.

142.—ST. LAWRENCE GULF.—*Chaleur Bay*.—*Carleton Point*.—A fixed red light, elevated 32 feet, and visible 12 miles, is now exhibited. Lighthouse white, and 28 feet high. Position, lat. $48^{\circ} 5' N.$, long. $66^{\circ} 7' W.$

143.—CALIFORNIA.—*Point Anó Nuevo*.—A steam fog-whistle has been established on the island off the point. In thick weather it will sound fifteen seconds with intervals of forty-five seconds. Position, lat. $37^{\circ} 6 \frac{1}{2} N.$, long. $122^{\circ} 19' W.$

144.—CALIFORNIA.—*Point Bonita Lighthouse*.—A steam fog-signal, a siren, has been established; it will sound blasts of four seconds duration, with intervals of thirty-five seconds.

145.—AUSTRALIA.—*Gulf of Carpentaria*.—*Limmen's Bight*.—*Maria Island*.—A reef, *Meikleham reef*, lying in the track of vessels bound to Roper river, has been discovered north-east of Maria island. The bearings given place the reef in lat. $14^{\circ} 46' S.$, long. $136^{\circ} 8' E.$

146.—AUSTRALIA.—*Cape Howe*.—*Gabo Island Light*.—The western limit of this light has been altered from S.S.W. to S.W. by S., so as to clear, when in sight, Cape Howe and the dangers to the southward.

CHANNEL STEAMERS.—The South Eastern Railway Company have at length taken a step in the right direction. They have put a covering over the deck of the *Albert Edward*. The object of this covering is to protect deck passengers from the weather and sea. In fine weather there is nothing more charming than a cruise across the channel in one of the small steamers now employed in the service between Dover and Calais and Folkestone and Boulogne, but when bad weather comes on then the little vessels become lively and the passengers the reverse. The new covering deck will protect the passengers from the spray and rain, but will afford them plenty of air. The covering will not, of course, in any way reduce sea sickness, but it will afford deck shelter, so that passengers on deck need not get wet as well as ill. The gigantic scheme of a railway ship stops the door against improvements in other directions: but there is no doubt that by improving the present ships, or rather improving on them and making larger ships with covered decks, ships capable of being steered at either end, the more ambitious scheme would fall through of itself. A ship only 50 feet longer than the present ships, would be a near approach to all that can reasonably be expected, at any rate for some years, and there is no reason why its construction should be delayed.

SOCIETIES—MEETINGS, ETC.

ROYAL GEOGRAPHICAL SOCIETY, June 24. Major-General Sir Henry C. Rawlinson, K.C.B., President, in the chair.

THE paper read was "Central Asia in 1872," by Mr. R. B. Shaw, the enterprising traveller, who was the first Englishman in modern times to face the dangers of a journey in Eastern Turkistan, and visit its new ruler at Kashgar in the winter of 1868-9. Mr. Shaw made a second journey as far as Yarkand in 1870, this time in an official capacity, as a member of Mr. Forsyth's mission to the Atalik Ghazi, or Sultan of these fertile provinces, recently detached from the Chinese Empire. In his paper Mr. Shaw gave a brief and graphic outline of the physical configuration of the country, followed by a description of its present political condition and relations to the British and Russian Empires. The country formed a vast basin, or depression in the mountainous centre of Asia, elevated from 3,000 to 5,000 feet above the sea level, and surrounded on the south, west, and north by ranges of the loftiest mountains in the world, whose peaks rose to beyond 20,000 feet, and the passes over which were seldom lower than 17,000 feet high. He showed the error of Humboldt's conception of these mountain systems—viz., that they formed, on the south, two ranges (Kuen Lun and Himalaya), and on the north one (Thian Shan), lying in an easterly and westerly direction, with another range (the Bolor) lying north and south, and connecting the Thian Shan with the Himalaya. Recent surveys had shown that the so-called Bolor was only the continuation of the great Himalaya system, which thus formed a broad belt of lofty land lying nearly north-west and south-east, and extending from the extremity of Assam to the upper course of the Jaxartes, and that the Kuen Lun was not a distinct range. The Atalik Ghazi, in 1870, was engaged in a war with the Tunganis beyond the north-eastern extremity of his dominions, the result of which was the conquest of the town of Turfan. But he was recalled from his expedition by a movement of Russian troops; and Mr. Shaw remarked that a depression in the height of the Thian Shan towards the east opens a ready passage from the Russian provinces into Eastern Turkistan. Mr. Shaw stated that our friendly relations still continued, and that other opportunities would soon arise for further exploration of this region.

The President stated that if dispatches from Dr. Livingstone arrived, as was expected, in the course of a few days, a special meeting would be called to hear them read; due notice of which would be given by advertisement in the daily papers.

A vote of thanks to the Chancellor and Senate of the University of London, for the use of their Hall during the past Session, was responded to with great warmth and unanimity by the meeting.

GENERAL.

SPITZBERGEN.—We learn from our correspondent at Stockholm that the proposal of the Government of Sweden and Norway to annex the islands of Spitzbergen has fallen through, and that, instead of annexation, colonisation will be effected. The establishment of an orderly Government of Swedes at Spitzbergen, with something approaching to organised communication with Europe will be of advantage. We do not see why an agent for Lloyds and for the Salvage Association should not be appointed there. With improved arrangements also we have no doubt that more accurate reports of wrecks of British ships will be forwarded to the Board of Trade from high latitudes.

TRADE IN NEGROES—WEST COAST OF AFRICA.—Advices reach us from the West Coast of Africa, to the effect that a large trade is carried on in Negroes used for labourers called Kroomen. The trade cannot be very bad, as we learn that the young men of the tribe called Greebeés, which supplies most of the Kroomen, are desirous of leaving their homes and taking up the service of labourers, and they strive to do so notwithstanding that they know that many of their countrymen never return. These men do all they can to get service in British ships and factories, but object to be employed by other foreigners. Altogether they are fairly well off, in fact they are much better off than can be by remaining with their tribe.

JAHRBUCHER FÜR DIE DEUTSCHE ARMEE UND MARINE.—In an article entitled, "Survey of Maritime Concerns," there is what purports to be a current report on latest occurrences and matters in connection with the Marine (it would appear chiefly, if not exclusively, War Marine) of different countries. The article first refers to the German Marine, noticing the recent creation of an Imperial Admiralty, and the intended (since revoked) dispatch of a German squadron of evolution to some distant parts. Passing to France, the article points out the renewed activity of late observable in the French arsenals and dockyards of the State, and the composition of the "school" and evolution squadrons recently formed; also notices a critical review of the *Moniteur de la Flotte* on the "organization plan" of the German fleet. Turning to England, the reviewer asserts that, in consequence of the late war having demonstrated the importance of Heligoland as a naval station, greater attention is beginning to be bestowed in England upon that island, as evinced by some recent articles on the subject in the public press, as well as the fact of some ordnance having lately been sent to the island, &c. Then the article refers to the *Megara* case, and the tunnel project across the Channel. Reverting to Austria, the article gives a succinct analysis of the contents of the "Year Book" for 1871, and the

"Archives for Maritime Matters," lately published. Lastly, the War Marine of Italy is briefly adverted to as being in want of a more efficient corps of officers. And, finally, the projected piercing of the Isthmus of Panama by the Government of the United States is briefly noticed. The article is interesting and uniformly well written.

THE LIVERPOOL COUNTY COURT AND THE COURT OF COMMON PLEAS.—THE "MADGE WILDFIRE."—In this case, *Simson and another v. Blues and another*, an application was made to the Court of Common Pleas, for a prohibition to the County Court of Lancashire, from further proceedings in a suit in that Court for £41 damages against the *Madge Wildfire*, arising out of alleged breach of charter-party and deficiency of cargo. The ship had been arrested under section 2 of Mr. Norwood's Act, the "County Court Admiralty Jurisdiction Amendment Act, 1869." The Common Pleas decided that the County Court had no jurisdiction to entertain the suit or to detain the ship, and that a writ of prohibition ought to issue. It was observed that even assuming that the construction of the Act appeared to give jurisdiction to the Admiralty side of the County Court in such a claim as the present, it must be borne in mind that no statute had conferred on the High Court of Admiralty, any jurisdiction to entertain any claim for breach of charter-party; and that had the claim exceeded £300 (the limit of the County Court Jurisdiction), neither the High Court of Admiralty nor the County Court would have power to entertain it. That the object of the County Court's Admiralty Jurisdiction Amendment Act, 1869, was *not to create a new jurisdiction* for the High Court of Admiralty which it never before possessed, and that the exercise of such powers by the County Court would press most unfairly upon small shipowners and charterers, whilst the owners of large vessels and charterers of valuable cargo would be unaffected by them. We gather from this decision that the Court of Common Pleas has snuffed out the County Courts Admiralty Jurisdiction Act, 1869, for it has laid down a rule that the County Court is only competent to deal with cases, under a limited amount, which could previously have been dealt with by the High Court of Admiralty.

CONSULAR.—The Queen has been graciously pleased to appoint for the Provinces of Malaga, Almeria, Granada, and Jaen, to reside at Malaga, Richard Wilkinson, Esq., now Her Majesty's Consul at Salonica. Also to approve for His Majesty the King of Spain, Don Jose Fronscky as Vice-Consul for the British Possessions in North America, to reside at St. John's, Newfoundland. For the United States of America, Mr. Wilson King as Consul at Dublin. For the German Empire, Mr. Paul Stromer as Consul for Hull, Scarborough, Bridlington, and Goole. For His Majesty the King of Spain, of Don Jose Modesto Blanco as Vice-Consul at Quebec.

FOREIGN IMPORT DUTIES.—BOARD OF TRADE, JUNE 24, 1872.—The Board of Trade have received from the Secretary of State for Foreign Affairs a copy of a decree of the Portuguese Government, fixing the import duty on tarred waterproof tissues at 10 per cent. *ad valorem*, and providing that an Article to that effect shall be inserted in the 19th Class of the General Customs' Tariff. Also a notification from the Secretary of State for Foreign Affairs of reductions of certain import duties by the Norwegian Storting. The principal articles upon which the duties have been reduced are—earthenware, glass, and iron wares. A statement of the new duties can be seen upon application at the Statistical and Commercial Department, Board of Trade.—*Gazette*.

GAMBIA CUSTOMS.—The Queen has been pleased to appoint Captain William Henry Towry Miles Cooper, R.M., to be Collector of Customs for the Settlement on the Gambia; and William Henry Simpson, Esq., to be Collector of Customs for the Settlement of Lagos, on the Western Coast of Africa.

DHU HEARTACH ROCK LIGHTHOUSE.—PASSING TOLLS.—At the Court at Windsor, the 25th day of June, 1872. Present, the Queen's Most Excellent Majesty in Council.—There shall be paid in respect thereof, for every vessel, whether British or Foreign, which may pass or derive benefit therefrom, the toll of one penny per ton of the burthen of every such vessel, for each time of passing or deriving benefit therefrom, if on an oversea voyage, and 2-16ths of a penny per ton for each time of passing or deriving benefit therefrom if on a coasting voyage. The said tolls are to be levied by the Commissioners of Northern Lighthouses, subject to the regulations and exemptions contained in the New Consolidated Tables of Light Dues, sanctioned by Orders in Council, dated respectively 24th of October, 1870, and the 16th of May, 1871, and to the gross abatement or discount of 50 per cent. mentioned in the said tables.

NICARAGUA SHIP CANAL PROJECT.—The Nicaragua route runs through a country for the most part healthy, famous for its fertility, and of the beauties and resources of which thousands of Americans have personal knowledge. It would, say the New York shipping lists, impose none of those exceptional labours which baffle the calculations of engineers. It is a practicable work, involving on one side the canalisation of a powerful river, and on the other the opening of a trench of some twelve miles under an open sky, and with no more serious difficulty than the heat of the climate. And this work it is possible to complete in five years, if prosecuted with the activity which marked the construction of the Pacific railroad, and would, it is estimated, cost not more than fifty millions of dollars, or half the expense of the Suez Canal, to realise a progress far more vehemently demanded by universal navigation.

BROKERAGE AND PILOTAGE AT BORDEAUX.—A decree of the President of

the Republic respecting the rates of brokerage and pilotage at Bordeaux is as follows:—Art. I. The fees to be collected by brokers, interpreters, and pilots of the port of Bordeaux shall in future be regulated in conformity with the tariff annexed to the present decree.—Art. II. As a transitory measure, the Syndical Chamber of Brokers, Interpreters, and Pilots will collect, during four years from the date of the present decree, from the shippers, other than owner, consignee, or captain, 1*l.* per ton of the goods shipped.—Tariff for sailing ships or steamers, French or foreign. Pilotage: Ships proceeding to or coming from ports between Nantes and Bayonne inclusive, 10*c.* per ton of measurement if in ballast, and 20*c.* per ton of cargo if laden. Other ports of France and ports of Algeria, 15*c.* per ton of measurement if in ballast, and 30*c.* per ton of cargo if laden. French colonies and foreign ports, 25*c.* per ton of measurement if in ballast, and 50*c.* per ton of cargo if laden.—Chartering: On mixed cargo, $2\frac{1}{2}$ per cent. on the amount of freight. By charter-party, $2\frac{1}{2}$ per cent. on the amount of freight or freights, in case of connected voyages.—Translation of documents: An ordinary bill of lading, 4*l.*; an extraordinary ditto, 6*l.*; a protest of bill of exchange, 4*l.*. Legal documents, for the first page (bearing a 1*l.* 50*c.* stamp), 6*l.*; second and following pages, 4*l.*—Sundries: Sale of vessels, $\frac{1}{2}$ per cent. of the purchase money, payable by purchaser. Passages, $2\frac{1}{2}$ per cent. on the passage money, authenticated by the broker's memorandum. Maritime brokerage paid exclusively by the charterer. In case of sub-chartering, the brokerage on the sub-charter to be paid by the sub-charterer. The shipowner, the captain, or the consignee pay no brokerage on the charter of goods shipped by themselves. Brokerage not to be due until after the loading is completed. A vessel going out of port and compelled to return is exempted from brokerage. Brokerage commission on all laden vessels not to be less than the fees payable by the same vessels in ballast.—TEISSERENC DE BORT, Minister of Commerce. —Dated Versailles, May 22, 1872.

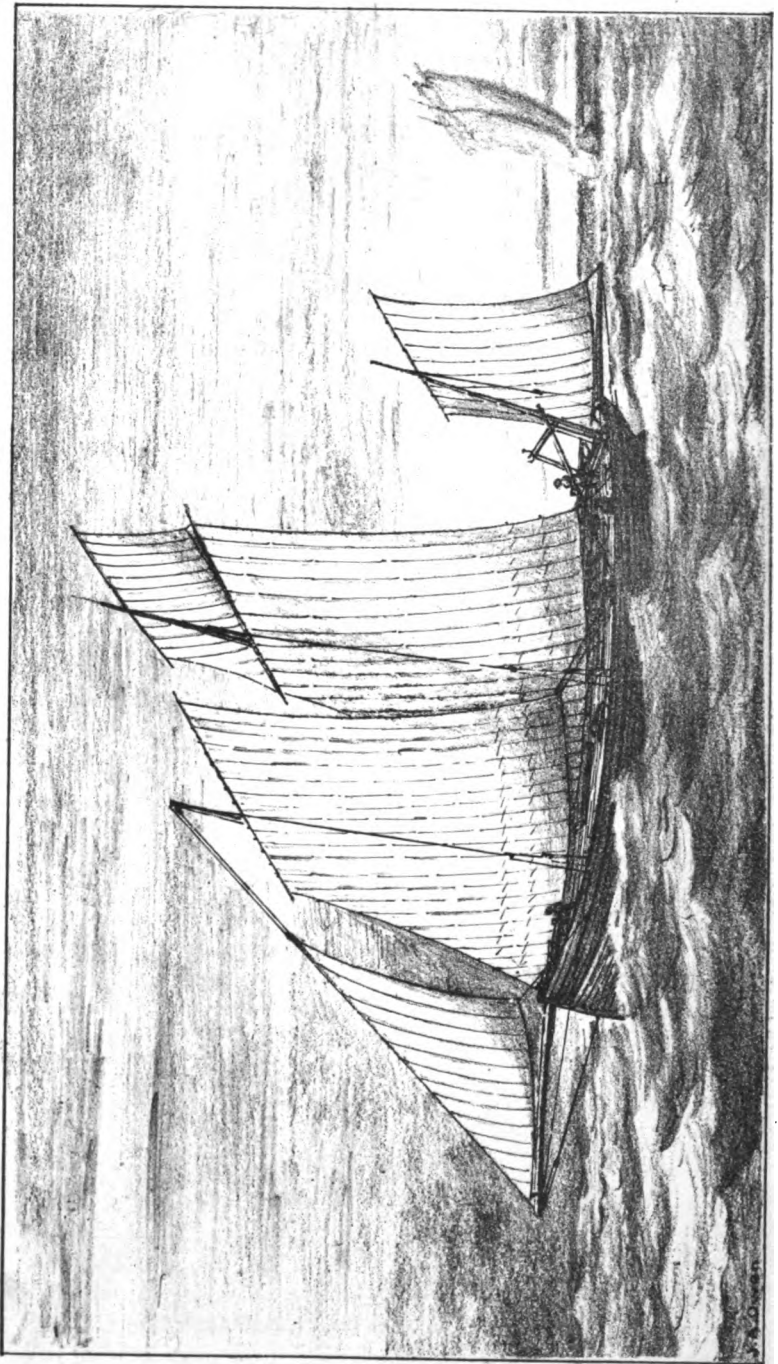
PROBLEMS.

SIR,—I beg to forward the solutions of the two problems propounded in the *Nautical* for July. 1.—Fourteen letters, including the one which starts the moment she arrives. 2.—(a.) N in both cases. (b.) S in both cases. (c.) None between the *courses*, but a great beal between the respective *apparent directions*. (d.) Find the time when a star is on the meridian of the respective places and start in the direction of it at that instant. Having started, keep due S.

I have the honour to be, Sir,

Your obedient servant,

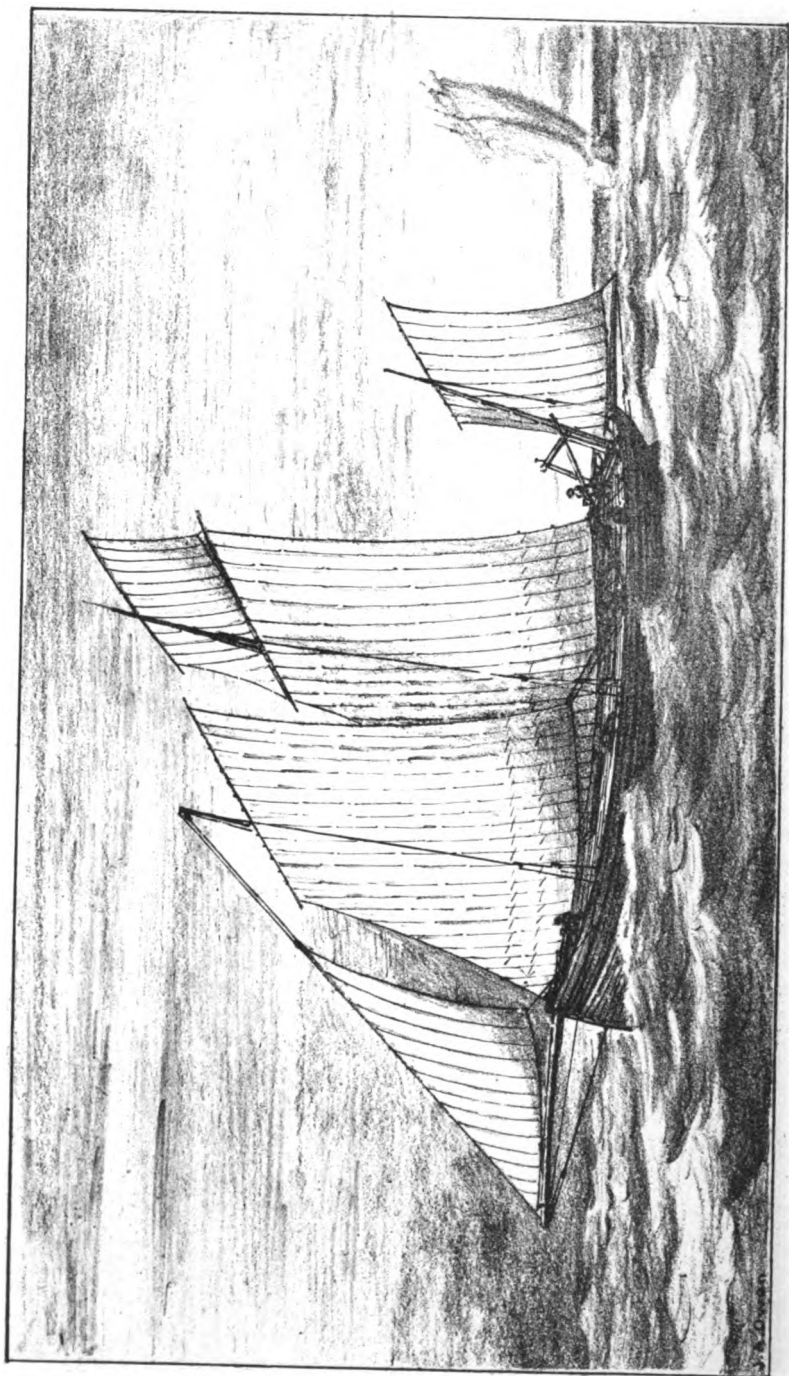
J. E. and A. E.



THREE MASTED LUGGER.

WAS THE LOGS

WAS THE LOGS



THREE MASTED LUGGER.

THE
NAUTICAL MAGAZINE.

NEW SERIES.

SEPTEMBER, 1872.

SUEZ CANAL DUES.

THE wording of the Act of Concession is, as regards dues, as follows :—
“ De ne pas excéder pour le droit special de navigation, le chiffre maximum de dix francs par tonneau de capacité des navires, et par tête de passager,” and the question is what does the expression “ tonneau de capacité des navires ” mean, and what does it not mean ?

The meaning of the English word “ capacity,” as applied to the contents of any utensil or vessel, is room or space measured by solid contents. In Dr. Johnson’s dictionary the following quotation is given from the writings of Locke, as illustrating this view. Locke says, “ Space, considered in length, breadth, and thickness, I think, may be called capacity.” This appears to be the true meaning of the word in the sense in which it is used to denote the capacity of any hollow body or vessel, whether that vessel be a bushel basket or a ship ; and in this sense it is without question used in the Act of Concession to the Suez Canal Company.

“ Tonneau de capacité des navires ” means, and can mean only, the “ tonnage of,” or according to, “ the capacity of the ships.” The term tonnage, as applied to the measurement of ships, not only in England, but in every country that has adopted the English system of gross tonnage, means *internal capacity*. A ton is in this sense, and for measurement purposes, 100 cubic feet of space. Tonnage of capacity of a ship is, therefore, in the case of British ships, the internal capacity of the ship measured in cubic feet and divided by 100, and the number

given by this operation is the so-called "gross tonnage," or "tonnage brut." In the case of foreign ships, also, the total internal measure of capacity is ascertained according to the national standard in each case, and is divided by a stated divisor which gives the internal capacity (in metres, lasts, etc., as the case may be), and that capacity, when once ascertained, is converted into English tons by a special factor.

That the framers meant "gross tonnage" in preparing the rule is evident. If they had meant something other than, or less than, or more than, the "*capacité des navires*," pure and simple, they could, and probably would (there is no reason why they should not) have said so. For instance, if they had meant the register tonnage, which is not the capacity of a steamship, but is much less than its capacity, they would have used the French equivalent "tonnage net."

There is another reason for presuming that the framers of the rule contemplated gross tonnage—viz.: that at the time the concession was drawn, a project had been set on foot to assimilate the tonnages of ships of all nations, beginning with the tonnage de *capacité*, or gross tonnage. This has been nearly effected, and now, so far as the most important maritime nations are concerned, the gross tonnage is international and universal.

It appears to be a perversion of the meaning of the phrase "tonnage of capacity of ships" as applied to a measurement in cubic measure to say that it means something less than, or more than, that measurement. To say, for instance, that it means "capacity for registered tonnage," "capacity to carry cargo," "capacity for passengers," "capacity for earning freight," "power to carry dead weight," is to pervert its meaning from something clear, express, and definite, to something that under the present registry laws is altogether indefinite; something that is ever variable, according to the special or temporary arrangement of the internal fittings of the 'tween decks, saloons, and deck-houses; and is not only different in ships of different countries, but is often different in ships of the same country. If capacity means the power to carry cargo by weight, then assuming that the present gross tonnage of a steamship were to mean tons weight of cargo that the vessel could carry, instead of meaning cubic tons of space, the figures expressing the gross tonnage, would as nearly as possible express the weight of the cargo in tons that can be carried, in addition to coals and engines. If "*tonneau de capacité des navires*" means only space occupied by passengers and cargo (freight earning space), as certain British shipowners contend, then the register tonnage is not that space, because the register tonnage is not the internal capacity of the ship, minus the engine-room space only; but is the internal capacity

minus more than that space? For instance, if the engine-room, as measured, amounts to 18 per cent. of the whole internal space of the ship, then 32 per cent. is deducted on account of engine and coal space, and in cases in which the 32 per cent. rule does not apply, the actual engine-room plus 75 per cent. is deducted. If the engine-room measures 58 per cent. of the hull, then there is absolutely no registered tonnage left on which to pay dues. But besides the fallacy of calling the register tonnage the "*tonneau de capacité des navires*," there is the further objection—viz., that the register tonnage often excludes altogether spaces under an upper deck, or in a deck-house or erection on deck. When we have put our own "register tonnage" right, by adopting a reasonable method of ascertaining engine-room deductions, it will be time to say that it represents something definite.

Whatever "*tonneau de capacité des navires*" is, or whatever the phrase may mean, it is quite clear that it is not, and cannot as yet mean "register tonnage."

As a common illustration, the capacity of a bushel basket is a bushel measured by solid contents. If the bushel be filled with tares, it contains no room for wheat, or if it be half filled with tares, only half its "capacity" is left for wheat; but because the tares are there, and the wheat is not there, or because tares occupy half the bushel and wheat the other half, that does not interfere with the "*tonneau de capacité*" of the vessel. The *capacity* is there. But suppose that 18 per cent. only of the basket be filled with tares, and the rest with wheat, and suppose that the 18 per cent. be not reckoned as 18 but as 32 per cent., it cannot be said that 68 per cent. (register tonnage) represents the space occupied by the wheat. And so in the case of a ship; the capacity of the ship is not lessened because part of it is filled up in one way, part in another, and part left empty; nor is the register tonnage any indication of that or any other capacity. The register tonnage is unsuitable and unfair for the purpose of taxation for the Canal, as the following further illustrations will show. Two French ships, when under the French flag, measured respectively 975 and 965 tons register, and paid dues on that tonnage. When sold to British owners, and measured under the British system, they were respectively 1,431 and 1,810 tons register. Here are two different tonnages, and neither is the "*tonneau de capacité*," and it is obviously to the disadvantage of all other owners of ships using the Canal that the lower tonnage of these two ships should be taken as the basis of taxation.

But, as we have hinted above, these inequalities not only exist as between foreign ship and British ship, but as between British ship and

British ship. At the present moment the newspapers show us that proceedings are pending with certain British shipowners who, it is alleged, have, by peculiarity of construction, caused covered and partially covered, permanent freight earning spaces to be added to their ships, spaces which pay no dues, but carry cargo, or accommodate crews and passengers, or facilitate the working of the ship, and add, both directly and indirectly, to her freight earning capabilities. In some cases, indeed, in which British ships were employed in the traffic through the Canal, it has been pointed out that grave evasions of the tonnage law as regards dues have existed. In some cases the ships in which these evasions existed have, we learn, been remeasured, but all the while they were and are running through the Canal, with exempted spaces, they were, like the two French ships we have referred to, underpaying the Company, and taxing all other owners running in competition. It has happened that a British steam ship, in which these exemptions were permitted, has carried a cargo far in excess of the cargo that would be possible to put into a *sailing* ship of the like register tonnage.

We have shown why we do not think the register tonnage is the tonnage on which Suez Canal dues ought to be paid; we now wish to show why we think the scheme urged on Mons. de Lesseps, ingenious as it is, is altogether wrong. If Mons. de Lesseps had accepted the gross tonnage as the tonnage on which to levy dues, we think his position would have been unassailable, especially if, on adopting that tonnage, he had lessened the rate per ton, but, if as would appear to be the case, he has not chosen that tonnage, but has chosen to make a tonnage for himself, he will have no right now to object to shipowners raising the whole question, and the shipowner has at least a chance for putting forward "register tonnage." In a French pamphlet, in which the tonnage question is discussed, the writer endeavours to show that tonnage, as applied to ships at the present time, means *weight*, and not *space*. Such an assertion as this is in itself enough to lead us to pay but little attention to the arguments of the person making it. We need not follow the mazes of his ingenious arguments, for they are disposed of by the admission that tonnage did once mean weight; but that both in this country and everywhere else it has, when applied to ships, ceased to mean weight; and that, notwithstanding historical research and ingenious arguments, the British shipowner, as well as shipowners of all other nations, will admit and hear of nothing to the contrary. We have endeavoured to show that the registered tonnage would be unfair to everybody, as a measure on which to charge dues; but what can we say of the formula which at a late meeting of the Company

was seriously put forward? It is, to the gross tonnage add 40 per cent., and from the sum deduct 21 per cent., and the result is the "tonneau de capacité" in weight. So that, seeing that the Company are limited to "tonneau de capacité des navires," they make that tonnage more than the gross tonnage of the ship. A ship of 2,000 tons gross, will pay on 2,212 as "tonneau de capacité," and be told then that an allowance of 21 per cent. has been made for engine-room. This arrangement cannot, we imagine, be the scheme referred to by Lord Enfield in the House of Commons, when his lordship stated, in reply to Mr. Gourlay, that—

"In consequence of communications from the Italian Government and other quarters on the subject of the intended imposition by the Suez Canal Company of a tonnage due of 10 francs on the gross instead of the registered tonnage of vessels, Sir Henry Elliot was instructed to ascertain the views of the Turkish Government in the matter. He reported that the Porte were at first disposed to think that the Company were not justified under the terms of the concession in considering the 'tonneau de capacité' as gross tonnage, but it appears from a further despatch of Sir Henry Elliot that the Porte had, after examining the question carefully, come to the conclusion that the Company might charge the gross tonnage duty, making the same allowance for engine and coal space as had been done by the Danube Commission."

On the same subject Mr. Chichester Fortescue subsequently stated in reply to Mr. Norwood, that—

"He believed it was the fact that the Board of Trade, in answering a communication from the Suez Canal Company, had said they were glad to find that the Company had decided on adopting the principle of charging dues on the gross tonnage of all ships. This, however, was only a theoretical opinion of the Board in favour of a system of measurement by gross tonnage, and had no relation to the amount of duty to be raised. As far as he understood, the Suez Canal Company did not intend to adopt the system of gross tonnage, pure and simple, nor yet that system combined with deductions according to the English practice."

Looking at the question quite impartially, the internal measure of the ship is the measure affording the best standard for the Suez Canal dues, This being so, the question may reasonably be asked why that capacity should not be taken as the standard in this country for port and harbour dues? The answer is, that the Suez Canal is neither a port nor a harbour, but a highway. Ships using it pay for it as for a road, not as for a place in which to remain for days, weeks, or months, for the purpose of receiving and discharging cargo, and refitting, repairing, and rebuilding. But in this country an agitation is going on, having for its object the transfer of

the dues from the register to the gross tonnage. The serious obstacle to this transfer is that dockowners do not charge according to time occupied, but only according to space. If time, as well as space, could be taken into account, then, for dock and harbour purposes, the fairest way to levy dues would be on the gross tonnage. In the Suez Canal, however, time need be no element of the calculation, since vessels pass through it, and do not (intentionally) stay in it.

Having in the above explained why in our opinion the Company would be acting within their powers in charging on the gross tonnage; having explained why the register tonnage is totally unsuitable as a basis on which to levy dues in the case of the Canal; and having given our opinion that a formula which has been pressed on Mons. de Lesseps should be resisted to the last, as creating a new tonnage against all accepted facts and systems, there are one or two other points on which we think it worth while to offer some observations.

First. It has been stated that it is *against the interest of the British shipowner* that the dues should be levied on the gross tonnage. It appears to us that this assertion can only be true on the broad principle that it is against the interest of any individual to pay in any case more than he can help, or to pay anything if he can get off without payment. But in the present case, seeing that dues must be paid, it is to the interest of all persons that taxation should be levied on equitable bases, not only as between individuals and ships of one country, but as in the present case, between individuals and ships of all countries using the navigation in common. For this the gross tonnage alone affords a standard. Further, as regards the *interests of British shipowners*, it is certainly to their interest that the Canal should be kept open, and it may be gathered from the statement of Mons. de Lesseps that it cannot be kept open under present management with reasonable profit to the shareholders, unless the Company levy dues, in excess of 10 francs on the net register tonnage.

Secondly. In so large a question as that of the Suez Canal, other interests are involved besides the immediate profit of the British steamship owner; and amongst those other interests are the not unimportant interests of the shareholders of the Company. The shipowners of Great Britain not only did nothing to originate and to forward the construction of the Canal, but actually opposed it, and now it is made they use it more than all other shipowners put together. Other interests involved are the interests of those who use the Canal in common with the British shipowner, but above and beyond those the interests involved are the interests of shareholders by whose money the Canal was made. The

British shipowner never has said and never will say that the shareholders ought to be neglected, and their interests entirely sacrificed, on the grounds that it is not to the interest of the British shipowner to pay dues for using the facilities created by the shareholders' capital.

Thirdly. We think we may safely assume that the Suez Canal Company would be exceeding the powers conferred on them by the Act of Concession, if they try to make a new tonnage, which is in excess of any tonnage ever yet recorded or accepted by any nation. That the Company will be too wise to do this is, we think, pretty certain; at all events the accounts we have lately seen of Canal dues contain charges on the gross tonnage, pure and simple.

Fourthly. Ought Her Majesty's Government to interfere as regards the dues? It is a very grave question whether Her Majesty's Government should interfere. The users of the Canal, like the users of a road, are the parties who pay, and who are interested in raising the question. Her Majesty's Government would not interfere between a Canal Company and a bargeowner in the United Kingdom, at least not to espouse the cause of one side against the other. The case would be referred by the parties, or one of them, to a proper court of law, which would decide the question. It would be still more out of place for Her Majesty's Government to interfere between a shipowner and a Canal Company as to the payment of dues, when the Canal is in a foreign country, was constructed by foreign capital, and is only used by our shipowners because it pays them to use it. Any interference by Her Majesty's Government would, we think, also be questionable, on the further ground that it would assume the shape of assisting the British shipowner to resist and escape payment to the shareholders who found the means for making the Canal. The complexion that would be put by the Company on such interference would be that shareholders would thus be made to suffer in order that the British shipowner, who amasses wealth by using the Canal, may be able to continue to make his profits.

We have endeavoured to be quite plain and straightforward in this matter, in order that the British steamship owner may realize his position. He is simply the customer of a foreign Joint Stock Company, without any voice or any right to a voice in its management, and he must regard himself in that light. There is, so far as we can see, no way out of the present very unsatisfactory state of things but the purchase of the Canal and the appointment of a Commission similar to the European Commission of the Danube.

THE BRITISH CONSTITUTION AND GOVERNMENT :
A DESCRIPTION OF THE WAY IN WHICH THE LAWS OF ENGLAND ARE
MADE AND ADMINISTERED.

(Continued from our August Number.)

CHAPTER IX.—PROCEEDINGS IN PARLIAMENT.—*(Continued.)*

PRIVATE BILLS.

PRIVATE Bills are measures presented to Parliament, sometimes by municipal bodies, but chiefly by private persons or companies, who seek powers which the existing law does not give them. If a company desire to construct a railway from London to Edinburgh, they would have no power, under the ordinary law of the land, to compel the owners of the land over which they desired the line to pass, to sell to them as much of the land as they required, and to bargain with each owner in turn would be a hopeless task. They accordingly go to Parliament, and ask for powers to compel these owners to sell the necessary land to them, at a price to be fixed according to certain rules as to compensation, etc., embodied in several Acts of Parliament, known as the "Clauses Consolidation Acts." The powers thus sought and acquired as to land are called "Compulsory Powers." The Bill conferring these powers, to which it is proposed to ask Parliament to assent, is lodged in both Houses, before the expiration of a certain day, yearly named in the Standing Orders of both Houses of Parliament, and usually some six weeks before the House actually meets. Immediately after the Session begins a petition is presented, praying for leave to introduce the Bill; and at a meeting of the principal officers of both Houses of Parliament, it is determined, having regard to the amount and nature of the business, generally, into which House the particular Bill shall be introduced. The Standing Orders relating to private Bills also require that the successive stages of Bills shall be taken at specified intervals, and on payment of stipulated fees, and that notice shall be given, either personally or by public advertisement, to all persons interested in the measure promoted. These precautions are taken, first, for the information of Parliament itself, and, secondly, that individuals affected may, if they choose, petition Parliament for leave to be heard against the Bill. It is customary to read all private Bills a first time, as a matter of course, if their promoters have complied with the Standing Orders; and, usually, Bills are read a second time, without discussion, and referred to a Committee selected by the House before which the Bill happens at the time to be. This Committee, which generally consists of five members, but sometimes only of four members, or of four members and a referee, sits as a Court, hears

evidence for and against the measure, and, having listened to all that can be urged by the promoters, or their counsel in favour of the Bill, and all that can be said against it by its opponents, or their counsel, makes a report to the House. If favourable, the Bill is ordered to be set down for a third reading, and if read a third time and passed, it goes at once to the other House, and is there dealt with precisely in the same way. The second House is regarded, not as a court of appeal, but as an entirely new tribunal, so that a Bill will, probably, be well considered before the powers it would confer are granted.

Such Acts as these authorizing the exercise of compulsory powers, are required not only in the case of railways, but in all cases where the rights of private persons, or the rights of the public would be interfered with by the work it is proposed to carry out. Very often proposed undertakings must obviously occasion great inconvenience to a private person, sometimes even to the extent of destroying his house, and taking away his business; and this person, perhaps, honestly thinks that no payment in money will compensate for the injury done him. Still, if great advantage will accrue to the public from carrying out the proposed work, Parliament holds the convenience of the individual must give way to the good of the many. But though the property is taken, Parliament will not allow the rights of the landowner to be sacrificed, for compensation is always secured to him, and if he can show good grounds for them, special clauses are often inserted in Acts for his benefit. Generally speaking, we may say that it is the interest of the public, coupled with a due regard for private rights, which guides the Legislature in granting compulsory powers to promoters of private Bills; and in order that the balance may be held fairly, and that no suspicion may attach to the action or interference of Parliament, all members of either House, whose personal and pecuniary interests, or even the interests of whose constituents are in any way concerned, in any such measure, are bound in honour to abstain from influencing the decision arrived at.

PROVISIONAL ORDERS.

Provisional Orders are orders made by a department of the State subject to the assent of Parliament. They are in the nature of private Bills, and give powers to private persons or public bodies to carry out works of public utility. Provisional Orders, for instance, are made by the Board of Trade to empower Harbour Trustees to improve their harbours. These Orders, however, are not framed at the caprice of an official, nor do they always correspond with the wishes of those who seek to obtain them; they are drawn up in strict compliance with an Act of Parliament, after due notice has been given to all persons concerned in

them that they will be applied for, and when drawn they are presented to Parliament in the form of a Bill for confirmation. Should this confirmation be withheld they do not become law, and the powers sought for are not conferred. Private persons, affected by a Provisional Order, have the power of petitioning Parliament against its being confirmed, and on their doing so, the Bill proposing to confirm it is treated in all respects as a Private Bill, and must be considered by a Select Committee, so that the interests of private persons are as well protected by the Provisional Order as by the Private Bill system. This method of granting Parliamentary powers to private persons is of recent growth, and was designed upon the ground that a department of State, such as the Board of Trade, was best able, in all cases affecting trade and commerce, to gather the information necessary to enable Parliament to judge of the propriety of granting the powers asked for. The Provisional Order system was also designed with a view to prevent expense in cases where there was a prospect of little or no opposition. But sometimes when unexpected opposition arises the expense is increased, because not only are the ordinary charges incurred of promoting a Provisional Order, but the expense is increased by defending the Provisional Order as if it were a Private Bill.

Similar Orders, although not styled Provisional Orders, but generally known as minutes or schemes, are laid on the table of both Houses of Parliament by the Educational Department of the Privy Council Office, by the Endowed Schools Commissioners, and other public bodies, in accordance with the provisions of the Acts of Parliament regulating their conduct, and these Orders have the force of law provided they are not successfully challenged by either House within a certain time specified by the Act under which they are presented.

THE ROYAL ASSENT.

As soon as a Bill has been agreed on by both Houses of Parliament, it is laid before the Sovereign by the Lord Chancellor, and the Sovereign assents or not, as the Cabinet may advise. It is long since the Sovereign has put a veto on a Bill, and probably it will be long before the right of veto is again exercised, for this reason, that it is upon the advice of the Cabinet that the Royal Assent is given or withheld, and the Cabinet would not venture to advise the Sovereign to withhold assent from a Bill which it was unable successfully to oppose in its passage through Parliament. If the Cabinet did so venture, it would become liable to a Motion of Want of Confidence in one or perhaps both Houses of Parliament, the consequence of which is fully described in the chapter on the Responsibility of Ministers.

The Royal Assent is given either in person or by Commission. If in

person, the Sovereign goes to the House in State as upon the opening of Parliament, and is attended by the great officers of State. When within the precincts of the House, the Sovereign is waited on by the Clerk of the Parliaments, who reads over a list of the Bills which have been agreed on by both Houses, and receives the Royal commands respecting them. The Sovereign then enters the House of Lords, and, seated on the Throne, orders that the Commons may be sent for in the same way as upon the opening of Parliament. The Commons having responded to the summons, and such of the Peers being present as may choose to attend, the Deputy Clerk of Parliaments reads the title of the first Bill on the list; the Clerk of Parliaments thereupon bows to the Sovereign, and turning his head so as to address the Commons at the bar without turning his back upon his Sovereign, he says in old Norman French, "*Le Roy le veult*," or, in the case of a Queen, "*La Reyne le veult*," : "The Queen wills it." He then again bows to the Sovereign, and the same form is gone through in respect of every public Bill upon the list. In the case of a private Bill, instead of "*Le Roy le veult*," he says, "*Soit fait comme il est désiré*," or "Be it done as it is desired." Should the Bill be in the form of an assent to a petition of right, the Clerk would say, "*Soit droit fait comme il est désiré*," "Be this right done as it is desired;" and in the case of a Bill granting money or supplies to the Sovereign, the Royal Assent would be given in the following words, "*Le Roy, or La Reyne remercie ses bon sujets, accepte leur benevolence, et ainsi le veult*," that is to say, "The King thanks his good subjects, accepts their bounty, and so wills it." Should the Royal Assent be withheld, the Clerk would say, "*Le Roy s'avisera*," or "The King will consider." As soon as the Clerk has signified the Royal pleasure concerning all the Bills presented, the Commons withdraw, and the Speaker, upon taking the chair in his own House, reports what has been done.

The Sovereign, however, seldom appears in person to give assent to Bills, and is usually represented by a Royal Commission. Under such circumstances, the Commission is signed by the Sovereign's own hand, and attested by the Clerk of the Crown in Chancery. It does not differ except in respect of the purpose for which it is issued from other Royal Commissions, and when it has been read by the Reading Clerk in the presence of the Commons assembled at the bar, the Lord Chancellor, as principal Commissioner, will say:—

"My Lords and Gentlemen, by the command and by virtue of the powers and authority to us given by the said Commission, we do declare and notify His or Her Majesty's Royal Assent to the Acts in the said Commission mentioned, and the Clerks are required to pass the same in the usual form and words."

Thereupon, the titles of the Bills being read, the Clerk of Parliaments

signifies the Royal Assent in the usual form of words, "*Le Roy, or La Beyne le veult.*"

PARTY GOVERNMENT.

The members of the Houses of Parliament, with few exceptions, attach themselves to some party which has a distinct programme, and a well-defined political creed. The chiefs of one of these parties usually form the Government; the chiefs of the most numerous opposing bodies are known as the leaders of the Opposition. Each acts upon the principle that "Union is strength," and those members who attach themselves to a party, usually set aside their private judgment, because they think it better that their party, as a whole, should prevail, than that they should give expression to their individual opinions; or, to put it in other words, because they think their party will govern more wisely and propose better laws, on the whole, than the opposing party. There are many members, however, who do not hold themselves amenable to any party or any leaders; and do not approve party government. They think it better that a man should exercise his private judgment on all questions, without reference to those who submit them to the decision of Parliament, and should vote with the Government or the Opposition, just as he may think best for the time. These are known as "Independent Members;" they form but a small minority of either House, and, being disunited, they have no power, as a body, and go to swell the numbers of the Government, or the Opposition, for the time being, as the case may be.

Each party has a complete organisation, and the leaders of each make known their designs and wishes to their followers, through the medium of a member selected for the purpose, who is commonly known as "The Whip." The Government Whip in the House of Commons is usually the Secretary to the Lords Commissioners of the Treasury, and he is also known as the "Patronage Secretary." The Opposition Whip is usually that member who occupied the position of Secretary to the Treasury, when the leaders of his party were in office. In the House of Lords the Government Whip usually holds some office in the Sovereign's Household, and the Opposition Whip is usually a Peer, who has formerly held such an office under the leaders of his party.

It is the duty of the Government Whip, whenever Ministers desire to proceed with business, to get together a sufficient number of members to make a House by four o'clock, and it is his business to keep together forty members in the neighbourhood of the House as long as the Government needs the House to sit. He has also upon all occasions, when the Government submits questions upon which a difference of opinion exists, to cause such a number of members of his party to attend, as will give the Government a majority of votes. The Opposition Whip

will, in like manner, bring together as many of his party as he can induce to attend, and each of them will do their utmost to win independent members to his side.

Those who object to party Government condemn the proceedings of the Whips, as being artificial, and think the country would be better governed, if members of Parliament voted spontaneously upon the basis of arguments submitted in debate, rather than upon the basis of considerations urged privately by "The Whips."

THE PRESENCE OF STRANGERS.

Strangers, among whom are included Peers in the one House, and members of the House of Commons in the other, as well as the reporters for the newspapers, are allowed to be present in either House, but may be excluded at any time upon a member calling attention to the fact that he spies strangers in the galleries. Upon his doing so in the House of Commons, the Speaker, as a matter of course, orders the Serjeant-at-Arms to clear the galleries, and the House thereupon debates in secret. At one time it was held to be unlawful to print reports of the debates, and some have been imprisoned for doing so, but now members are anxious that their speeches should be reported that their constituents may be informed of their proceedings. Very often debates are carried on when only a dozen members are present, and when it is obvious that the speeches are made solely that they may be published in the newspapers, so that although the power of excluding strangers is retained it is very seldom used, and twenty years have been known to pass by without the right to exclude strangers having been once exercised. To procure admission to the strangers' gallery, it is necessary to be furnished with an order from one of the members, each of whom has the right to give one for each sitting. Admission to the Speaker's gallery is secured by presenting an order signed by the Speaker himself; and ladies are introduced to a gallery set apart for them by members who have precedence one of the other, according as they write their names in a book kept for the purpose. Strangers sitting in the House are obliged to retain their seats; they may not stand up, nor may they read nor write. This rule, of course, does not apply to reporters for the newspapers who have a gallery set apart for them, to which no one is admitted unless provided with a card bearing the name of the holder and the journal he represents signed by the Serjeant-at-Arms.

Similar rules prevail in the House of Lords with regard to the admission of strangers, except that all such matters are in the Upper House under the control of Black Rod.

PETITIONS.

Although the people have a voice in the Legislature only by the act of the Commons choosing representatives to serve in Parliament there

are many ways in which public opinion expresses itself in a less formal manner, and influences legislation. In the first place, every person has the right to petition either House of Parliament, and provided the petition is properly worded, no Peer or member of the House of Commons should decline to present it. It is not necessary that the persons presenting the petitions should agree with its prayer nor be in any way concerned in its object, but it usually happens that petitioners make their appeal through their representative in Parliament, or through some other who they know will sympathise with them. Closely allied to this right to petition is the right of public meeting and of free speech, by which public opinion makes itself felt in Parliament; indeed, petitions generally emanate from public meetings. It is the duty of everyone before signing a petition to make himself thoroughly acquainted with the subject to which the petition relates, and to be convinced that the prayer of the petition, if granted, would result in a benefit to the community. Unless a person can assure himself upon these points, it is better he should not sign, for by doing so he would be deceiving the Legislature.

Petitions on being presented are referred to a Committee which examines them, and from time to time presents a report to the House describing the prayer of each petition, whence it comes, and the number of persons who have signed it. If the Committee should have reason to suspect the genuineness of a petition; if, for instance, it suspect some of the signatures to be fictitious, it would cause inquiry to be made on the subject, and if the suspicions of the Committee proved to be well founded, the House might not only reject the petition but punish the offenders for contempt.

Members of the House of Commons on presenting a petition cannot do more than state its prayer; they cannot comment upon the subject to which it refers. Members of the House of Lords, however, are restrained by no such rule, and may make a speech upon presenting a petition; other Peers may answer them, and a long debate may ensue.

The people have also the right to petition the Throne. Petitions to the Sovereign, however, are usually presented through the Ministers of the Crown, except in the case of some great corporate bodies, who possess by charter the right of presenting petitions to the Sovereign in person. The Corporations of the cities of London, Edinburgh, and Dublin have also the right to present petitions in person at the bar of either House of Parliament. On doing so, they appear in their robes of office before the commencement of public business, and state the prayer of their petition in the same way as a member would.

PROROGATION AND DISSOLUTION.

The prorogation of Parliament from Session to Session, and its disso-

lution, when occasion arises, rest entirely with the Crown. A Parliament ceases to exist at the end of seven years, as a matter of course, unless previously dissolved, and the Crown must summon a new Parliament within three years of the dissolution of the last. Upon the demise of the Crown, Parliament is required to assemble immediately, without being summoned, no matter if it shall have adjourned for a long period, or has been prorogued; and having so assembled, its powers would last for six months, subject to dissolution or prorogation by the new Sovereign before the expiration of the six months; at the end of that time, however, it would cease to exist, and a new Parliament should be summoned.

Parliament may be prorogued and dissolved on the same day. It is dissolved by Royal Proclamation, which usually gives orders to the Lord Chancellor of Great Britain and the Lord Chancellor of Ireland to issue writs for calling a new Parliament.

CHAPTER X.—THE BALANCE OF POWER.

HAVING now described the various parts of the organization by which the laws of England are made, it will be well to review the whole, and see how admirably each part checks and controls all the rest in its turn. And the more we examine into the working of our Constitution, the more clearly shall we perceive that the power of controlling the destinies of the nation is actually in the hands of the people themselves, if they will but act in accordance with the Constitution.

The Sovereign, though endowed by birthright with supreme authority, and occupying the position of Chief of the State, cannot act in contravention of the law; and, although able to exercise immense influence on the destinies of the nation, by a personal control of the affairs of State, is restrained from so doing by constitutional usage, as distinguished from constitutional right. Numerous subtle influences are at work, restraining the Sovereign from exercising the immense power his position as head of the State confers. Unquestionably the Sovereign is not insensible to the feeling of the people, and that feeling is exhibited and brought to bear upon him with extraordinary force, with unmistakable clearness, and with remarkable promptitude. Monarchs, less wise and discreet than those of our day, have often been deterred from imprudent actions by the rough complaints of the populace assembled in the Market-place, the Exchange, or at the Palace-gates. Monarchs, in like manner, have often been encouraged to continue in a policy approved by the nation, by the applause of the multitude upon their appearance in public places, or when passing along the streets. The feeling of the people, however, can be gauged in this country by more certain means than the cries of the multitude.

The Press, which may be regarded as part of our Constitution, scarcely less so than the Cabinet, since neither are established by law, though the position of each is clearly defined by usage, and both are amenable to the law, represents and interprets the feeling of the people with unfailing accuracy. The Press cannot misrepresent the people, because it lives by the people, and whatever the people will not support in the Press, cannot live. It is true that unprincipled men sometimes foster discontent among the ignorant, and others, believing what they publish, endeavour to inculcate false principles; but, happily, the intelligence of the vast majority of the people prevents harm resulting from such publications, and those in authority wisely regard them with indifference, except as an indication of the extent to which the opinions represented by them prevail. It may be taken as an axiom that a journal represents the feeling of the nation in proportion as it is pecuniarily successful; and, accepting this axiom, we may conclude that, inasmuch as no journal can live which has not a constituency to support it, so every journal, however obscure, however untruthful, however bad, may be taken as representing the feeling of some portion of the nation. Obviously, a successful newspaper becomes a very powerful engine for the formation of public opinion, because it happens with the Press, as with every part of the recognized Constitution, that the influence it exerts acts and re-acts upon its constituency and upon itself. A newspaper is supported by those whose opinions it expresses. It puts into definite shape what is in its reader's mind in a nebulous form, or else it absolutely forms an opinion in its readers' minds on the basis of principles which its readers accept. The Press is thus a leader and former of public opinion only when it pronounces a judgment in accordance with principles generally accepted by its readers, and it cannot lead public opinion long, unless it fulfils these conditions. Therefore we may say, with perfect confidence, that the opinion of the people may be gauged with unfailing accuracy through the Press, and we may assume that it is so gauged by the Sovereign and his Ministers, who shape their conduct accordingly.

The Sovereign is therefore influenced, and even controlled, firstly, by the necessity he is under of securing the services of Ministers to submit his designs to Parliament, of procuring the concurrence of the nobility, as represented by the House of Lords, and of the commonalty, as represented by the House of Commons, and also of obtaining the loyal approval of the people generally, as distinguished from their Parliamentary representatives. Setting aside for a moment the constitutional practice, let us imagine a Sovereign determined to prosecute his own wishes in opposition to the wishes of the people. Being the fountain of honour, it might not be impossible for him, by conferring social distinctions and marks of royal favour to secure a Cabinet subservient to

himself. It would be difficult, because Ministers of State are far more sensitive to public opinion than the Sovereign, inasmuch as their position is more dependent upon public than royal favour, as we have already seen in the chapter on "the Responsibility of Ministers." But, assuming such a Cabinet secured by the Sovereign, the further prosecution of his designs would be impossible, for even if his measures were favourable to the Lords, and calculated to sustain their power, the Commons would have to be conciliated, and although many of them would be men of high social position, who might not be disinclined to favour the pretensions of the Sovereign, and increase the power of the nobility, the large majority would have no such inclinations, and would unquestionably be faithful to the trust reposed in them by their constituencies. The people, by petition, and by demonstrations in public meeting, by the exercise of the right of free speech, and by the expression of their opinions in the Press, would stimulate the House of Commons, and support them with irresistible force; so that if such a contention as that we have supposed were to arise, it could not be maintained. If the people willed it, the Sovereign would be obliged to give way. An appeal to the country would not serve the Sovereign; it would simply result in the elimination from the House of Commons of all those members who in any way favoured the obnoxious measure, and the contest would assuredly result in its withdrawal.

If we approach the question from the other side, the power of the people is equally apparent. The Sovereign has the right to veto any Bill agreed on by both Houses; he might, for instance, be disposed to veto some Bill which had emanated from a section of the community unfavourable to the Monarchy, and he might secure a Cabinet whose wishes would correspond with his own in this respect; but, although the Cabinet might desire to advise the Sovereign to veto such a Bill, it would not venture to do so, when the House of Peers, as well as the representatives of the people, required it should pass. The Cabinet, too, would be little disposed to advise the Sovereign to veto a measure, whose rejection it had been unable to secure by either branch of the Legislature. Constitutional right, in such a case, must give place to duty, just in the same way as it is not always politic, to insist upon rights in private life, when courtesy requires one to give way.

The same distinction must be made, because the same feeling operates in all branches of the Legislature. In theory, as we have shown, the legislative authority of the House of Lords is co-ordinate with that of the House of Commons. It can absolutely reject, not only once, but as many times as it chooses, and not only without sufficient reason, but without any or pretence whatever, any Bill which may have been passed

by the House of Commons, however vitally affecting the liberty of the subject, or however urgently demanded by the whole community. But then it would not venture to do so. If it did, it would be equally competent for the Crown to create a sufficient number of new Peers as would outnumber those who objected to the measure which the country desired should become law, and which the existing House of Peers refused to endorse. In fact, the House of Lords cannot safely reject an important Bill, or neutralise it by amendments, unless it has good reason to believe that it has a majority of the English people at its back, who are opposed to the existing majority in the House of Commons. It might, however, happen that upon a question affecting some powerful and compact section of the community—some influential trade, for instance—private selfishness might prevail for a while in the House of Commons over the good of the nation at large. At such a juncture, the independent action of the House of Lords would be of great public service. Uninfluenced by trade, with their positions as members of the Legislature secure, uncontrolled in any instance by a constituency in which the trade or interest concerned might predominate, generally led by men of learning and large experience trained to statesmanship, and possessing the courage necessary to place themselves in opposition to an influential section of the community, the House of Lords would in such a case do the State incalculable service by refusing to pass measures even though heartily adopted by the House of Commons. If the Ministers of the Crown, influenced by the same considerations as the House of Commons, went the length of appealing to the country upon the question, as against the House of Lords, the interest or trade which had nearly been victorious would be swamped by the nation at large, and the House of Lords would be justified in its action. In the same way it would be perfectly competent for a House of Commons to stop the Supplies for carrying on a war, even though the majority of the people desired it should be carried on; but if it did so, the wishes of the people would quickly become known, and the House of Commons would be unable to withstand the expressed desire of the Crown, the House of Lords, and the people combined.

We are, therefore, brought to the conclusion that the people form the final Court of Appeal in all questions of government in the United Kingdom. That Estate of the Realm which most accurately interprets and acts in accordance with the will of the people, whether it be the Crown, the Lords, or the Commons, will assuredly control the destinies of the nation, for, with the people on its side, its position is unassailable.

(To be continued.)

TRADE AND INSURANCE MATTERS IN COLUMBIA.

(LATE NEW GRENADA.)

NOTES BY COMMANDER W. SYDNEY DE KANTZOW, R.N.

SPECIE PRODUCTIONS IN COLUMBIA.

OF the nine States of the Republic of Columbia, the most notorious for producing specie are Antioquia, Cauca, and Tolima. On the arrival of Humboldt in the Spanish main, he was struck with the extraordinary mineral wealth of New Grenada, and a chart, compiled and published in the early part of this century, giving Humboldt's travels, records his opinion of the extent and character of the mineral treasure of this country, which is only beginning to be fully realized at the present time.

During the earlier period of the Spanish rule, shortly after the colonization of the country, and the subjugation of the generally passive Indians, mining operations were carried on by the compulsory labour of the natives, but their number having rapidly diminished, under the tyranny and oppression of their masters, negro slaves were introduced into the country to supply the deficiency. The falling off of the aboriginal Indian had, however, been so considerable, that, in spite of every effort, labour became so scarce as to produce a very sensible decline in the produce of gold towards the beginning of the present century, and many highly productive mines had to be gradually abandoned by their owners. The War of Independence brought all mining industry to a stand, and it has never since fairly recovered; even the rich alluvial deposits, which formerly gave such magnificent results, have been abandoned, and are remembered now only as traditions of former wealth.

In the earlier part of the present century, the mines of Cundinamarca were objects of great importance, and at that time were considered equal in mineral treasure to any in South America. The States of Antioquia, Cauca, and Tolima, which form part of the ancient Cundinamarca (now the United States of Columbia) are discovered to be very rich. It is to these three States that universal attention is at present directed, and here the English mining community are exclusively engaged.

ANTIOQUIA.

In this State are situated the rich mineral fields of Zaragoza, Remedios, Annori, Amalp, etc., etc. These mines are chiefly worked by native proprietors, some of them being very valuable. The gold dust obtained from these districts varies much in standard, the highest giving by assay about 90 per cent. of fine gold. The actual product of these mines averages from 8 to 10 arrobas, or from 200 to 250lbs. weight of

gold dust monthly, and about 8 to 9 times this amount of auriferous silver.

The carriage of this specie from the mines to Medellin, the capital of the State, distant severally from 15 to 83 leagues, is at present conducted by the proprietors of the several mines, on the backs of mules, accompanied by an armed guard. An armed escort, however, is not at all times resorted to, the character of the natives being still simple and honest. No attempt at highway robbery has as yet been made in the interior; and the conductors have also been found fully trustworthy. At Medellin the gold dust is run into bars, a small portion of it is coined for circulation in the country, and the remainder is conveyed, under Government escort, to Nare, the nearest port on the Magdalena River, and thence shipped for conveyance to Europe. The treasure is insured by an open policy effected in London at one per cent. for the whole route.

CAUCA.

The whole state of the Cauca contains 487,000 inhabitants, and is one of the richest and most populous of the United States of Columbia. Its rich mineral wealth has formed the great attraction to people of late; but the soil and climate are well suited for growing cocoa, coffee, tobacco, cotton, bark, etc.

The rich silver and gold mines, situated in the Viga de Supia, were first discovered about 1812, but the operations in working them have been limited, and not always continuous, in consequence of law-suits and revolutions. Now, however, with a settled Government, the spirit of enterprise is certainly on the increase, and the varied mineral wealth of these districts, including that of Marmoto and Rio Lucio, which have only been partially developed up to the present time, will from the quantity and richness of the lodes, and their peculiar accessibility to the miner (cropping up as they do in many places above the surface), yield large returns, at a low expenditure in labour and machinery.

The whole country is profusely intersected in every direction by metallic veins, and in some places, Queitrabomo, for instance, the entire surface appears as the back of one immense lode. Until recently, the attention in this neighbourhood has been solely directed to the prosecution of gold producing veins; and lodes, driven on with this view, and abandoned, have been discovered to be rich in silver, and throughout this district, rich as it is in gold, it is found as rich in new silver lodes.

Further S.W. of Rio Lucio, in the neighbourhood of Quinchia, have been found a number of new silver lodes, of the most promising character, scarcely commenced. Probably the want of capital has deterred those on the spot from developing their source of riches.

At the Marmetto mining establishment, belonging to Mr. Percy

Brandon, the ores treated are iron, pyrites, and geissen, which, after being wet-stamped, are passed through grates on to inclined planes, covered with blanketing, and on being sufficiently concentrated, the gold is separated in the water. Recently, silver lodes have been developed in this and the adjoining mine of Aqua Clara, and the monthly remittances at the present time to Medellin average in value from \$25,000 to \$30,000 in gold and silver.

The Province of the Cauca, which extends to the Pacific Coast, and is called the Choco, is still a dense, continuous forest, without much cultivation, road, or pasture; it is, nevertheless, very rich in alluvial gold deposits, which between the 2° and 6° of north latitude contain also platinum, in grains more or less in equal quantities with the gold. The gold and platinum are extracted from these grounds on a small scale by natives, who bring the results of their labours, every fortnight or so, in quantities ranging from two ounces or less, to the principal towns, and there barter them for salt, provisions, and clothing. The principal of these towns is Quibdo, the capital of the Choco, situated on the banks of the Atrato, about 350 miles from its mouth in the Gulf of Darien. There have been nuggets of gold found in this province, weighing as much as 25lbs. The merchants of Carthagena appoint agents at Quibdo to collect gold and platinum for them, which is shipped from this port in barges or canoes, down the river, with open policies of insurance effected in London. The mode of keeping accounts at Quibdo, however, at the present time, is incomplete and unsatisfactory; there is as yet no regular system of book-keeping current.

TOLIMA.

The most noteworthy mines in this State are the Santana and Friess silver mines. The former has been worked for very many years. The average yield of the Santana lode has been upwards of £55 per square fathom of the whole plane of the lode, and 25 per cent. of the silver is lost in the treatment. Its produce is regularly remitted monthly to Bogota in silver bars, and there coined in the mint, forming the chief supply of silver coin in the country. The Friess mine exports its mineral in a concentrated state to England for reduction.

The acquisition of a mine in this and the adjoining States by denouncement to the Government is easy and equivalent to a fee simple in England. Before such patent is granted, all adverse claims are heard, and four months' notice is given to claimants by affixing edicts at the public offices; after that date the discoverer will hold the mine against all comers. He is obliged to work the mine a certain number of days annually, or others may in turn denounce it as abandoned. Recently, out of at least twenty proprietors or owners of mines, who have become

possessors by denouncement to the Government, not more than two or three are able to develop their riches through want of means. The failures which have taken place in this State amongst the mining community arise from insufficient capital, from the enormous interest which the borrower has to pay for funds to establish his concern, and in some instances from the ancient and laborious method of extracting the metal, and from the scarcity of labourers.

A most important enterprise has lately been started in this State, which consists in applying the hydraulic principle for working extensive and noteworthy gold alluvial deposits situated near Maraquita (formerly the capital of the State), 8 miles from the port of Honda, on the Magdalena, and which, according to State statistics, were once worked by the Spaniards, but it is evident in an old-fashioned and irregular manner. They left the *débris in situ*, and, in fact, handed over and over again the gravel they dealt with, beneath which, it is now ascertained, there exist rich strata of paying ground. The "frontes," or banks, still exposed, range from 120 to 150 feet in height, and it is believed that the bed rock must be nearly as much lower than the lowest point now open. The general run of the alluvial beds is from north to south, forming a distinct channel many leagues in length, and crossing the existing streams and rivers at right angles. There is no doubt when the hydraulic works (which are the first introduced into the country), are completed and brought to bear the returns will be enormous. The quality of the gold disseminated throughout the gravel is very fine. In California, by the hydraulic process, gravel containing only 3 cents per ton is made to yield handsome results, and the relative quantity of gold extracted superseding the old methods is given in Mr. J. A. Phillipp's book on "Mining and Metallurgy of Gold and Silver," (page 161) as follows:—

The cost of handling a cubic yard of gravel will be nearly as follows :

With the pan	\$20.00
With the rocker	5.00
With the long tom	1.00
By hydraulic process ... ..	.05

Both the States and Central Government are giving great facilities for mining enterprise, and concessions of land are freely given to mining companies. The means of satisfying investors in England as to the character of enterprises in the specie-producing States is very easy, not those means by which these undertakings are commonly introduced, but by sending to the spot a competent and experienced gentleman specially deputed to examine and report impartially on the mines already uncovered, and which can be purchased from the present owners at a very low figure. Certainly since the last revolution and now that the Government of the country is settled with the spirit of enterprise on foot in consequence

of the recent discoveries in these States, mining on an extended scale, may be contemplated seriously, with the object of realising a large, secure, and permanent profit at a comparatively small outlay.

NAVIGATION.

The navigation of the rivers in the Republic of Columbia is free, and the principal rivers—viz., the Magdalena, Cauca, and Atrato, are peculiarly well situated, and adapted for the transport of its home produce. At the present time there are thirteen steamers on the Magdalena, one on the Atrato, and nine on the Cauca, both of which latter rivers, with a small outlay, can be opened to general steam navigation, the great impediment hitherto on all the rivers have consisted of snags, rapids, and dry seasons.

It has been proposed to establish a line of steamers constructed on the snag principle, when loaded to draw not more than 24 inches of water, fitted with engines of superior power to overcome the resistance of the current, to navigate the River Cauca up to the ports of Rondal or Valdivia, situated about four and six leagues respectively above the town of Caceres, thus shortening very considerably the route to the interior of the States of Antioquia and Cauca. At the junction of the River Cauca with the Magdalena, it was proposed to have a coaling station, and to work the Zaraza coal fields to supply the necessary fuel. From the existence of a paying goods traffic all the year round, independently of the many passengers moving in the States and between the States and Europe, there is no doubt the enterprise will shortly be set on foot.

The Atrato has the advantage of being easily navigable from its mouth to Quibdo, the capital of the Choco, the bar allowing a free passage for vessels drawing six feet of water. The current of this river is not so strong as that on the other nor does it shallow so much in the dry season; the traffic, however, is not nearly so considerable. At the present time the ordinary barge or canoe journey up the Atrato to Quibdo is from 36 to 42 days, when they are poled along the banks against the stream by the natives. One small steamer is now running, owned by a merchant at Carthagena, but she is badly adapted to the river obstacles and traffic. The principal export articles brought down the river are india-rubber and hides.

GOVERNMENT, POPULATION, AND LAND CARRIAGE.

The Republic of Columbia, formerly one of old Spain's Colonies by conquest in South America, was divided after its independence into three smaller Republics—viz., Venezuela, Equador, and New Grenada.

On the successful issue of General Mosquera's Revolution in 1860, against the New Grenadian confederation, which was ratified at the Peace Convention in Rio Negro in 1864, New Grenada was divided into nine

Federal Sovereign States, and called the United States of Columbia. The executive power is vested in the President, who is elected every two years, and there is a Senate composed of three members for each State, and a House of Representatives of one member for each 5,000 inhabitants. The Government has had an unbroken Liberal majority ever since.

The seat of Government is at Bogota, the capital of the Republic, which is situated on a plateau, at an elevation of 8,000 feet above the level of the sea, affording a good climate, but inconveniently situated for ready communication as a central point with its present commercial districts. Slavery no longer exists in the country, and capital punishment is abolished. In its nine Federal Sovereign States there are 60 cities, 82 villas (towns which have special privileges), and 705 towns. The present population is a little over 8,000,000, divided as follows :—

POPULATION OF THE STATES.

Cundinamarca	892,000
Antioquia	850,000
Boyaca	456,000
Tolima	251,000
Bolivar	456,000
Cauca	437,000
Santander	496,000
Magdalena	100,000
Panama	174,000

POPULATION OF THE CAPITALS.

Bogota	60,000
Medellin	14,000
Tunja	5,000
Guamo	600
Carthagena	11,000
Popayan	7,000
Jocoris	4,993
Santa Martha	4,346
Panama	6,000

The revenues of the country exceeds 8,000,000 sterling derived from its Customs dues, levied at the sea ports; and the monopoly of the salt mines of Jepaquira, near the capital.

The great cordilleras of the Andes traverse the country from south to north, in three parallel ridges, throughout its entire range. All climates may be found upon them from tropical heat at 90° Fahrenheit, on the coast, to 40° temperature on the inhabited mountains and plateaux. In

the Province of Choco, in the State of Cauca, rain is incessant, but generally, in the other parts of the country, there is three months alternate dry and rainy seasons.

All the year round, from the variety of the climate, and the rich fertility of its virgin soil, there is no country capable of producing a larger amount of agricultural produce than this Republic. At the present time, independently of the exports, the home produce is restricted chiefly to maize, sugar, wheat, and vegetables of every description, and the grazing and breeding of cattle, the latter being one of the principle industries; but the one serious drawback to the further production of home produce, and the cultivation of an extensive and inexhaustible soil for foreign export, is the difficulty of bringing it within reach of the European markets, from the total want of anything like a reasonable method of conveying the produce from one place to another, even for the smallest distances by land. The country is very mountainous, without bridges, or regular roads, in place of which are mule tracks, more or less obstructed by the fall of timber, and the washing away of the ground by heavy mountain torrents in the wet season. As an instance, it may be shown that in many places the cost of conveyance, from ten leagues distance, to any port, or any of the principal rivers, is more expensive than the whole of the subsequent freight from thence to Europe. The present mode of land conveyance is on Indians backs, and the backs of mules, donkeys, and oxen. The time, however, is at hand when all this may reasonably be expected to be changed, for besides the mountain ascents, there are large valleys and plateaux, or high table land, and long tracks of plain even ground, at the foot of the ridges of the mountains, running through the most fertile part of the country, and which can be easily be made available for road or rail by the expenditure of capital. As the Government has stood firmly now some years, enterprise is gradually making its way. The English have been the first to send out engines to many parts of the country for railway traffic, while the great railway on the coast is now in full operation.

IMPORTANT NOTICE.—PRIZE SAFETY VALVES.—We have deferred the date down to which designs may be sent in to the 1st October, 1872. Any competitors who have already sent, and who may wish to send amended drawings in, can do so before that time without an extra £2. None have been opened, and none will be opened until after the 1st October, which will positively be the last day for receiving drawings. Several drawings have arrived without any remittance. These will not be opened at all, as the conditions are not complied with.

THE NAIAD.

BY PERCY HAMILTON.

I would rather be a Naiad
 Than a Dryad ;
 One of Ocean's merry daughters,
 Born and cradled in the foam,
 With a home
 Fathoms deep below the waters.

There is ceaseless change and motion
 On the ocean,
 Which is lacking on the earth.
 Season upon season follows,
 And the swallows
 Come and go,—but where the mirth ?

Where the mirth of sea-tossed gambols,
 And of rambles
 In and out of azure caves,
 Plucking flowers which never wither,
 Hither, thither,
 At the wild will of the waves ?

THE DRYAD.

BY PERCY HAMILTON.

I would rather be a Dryad
 Than a Naiad,
 Dwelling in some twilight grove,
 Where the nightingale and linnet
 Deep within it,
 Warble forth their tales of love.

Who would choose a restless billow
 For a pillow
 If he wished for rest or sleep?
 Naught a grassy bank surpasses,
 Where the grass is
 Sweet with flowers, and soft, and deep?

We, too, have our fun and frolic,
 As we rollic
 In and out amongst the trees,
 Twining wreaths of summer roses,
 Pelting posies;
 Can you match such joys as these?

CYCLONE AT MADRAS, OF 2ND MAY, 1872.

WE have been favoured with the following report made by N. R. Pogson, Esq., F.R.A.S., Government Astronomer and Meteorological Superintendent, to the Chief Secretary to Government, Fort St. George, dated Madras Observatory, 10th May, 1872 :—I have the honour to submit to your notice the accompanying meteorological records, with special reference to the severe cyclone which visited the eastern coast of this Presidency, on the 2nd instant, with such terrible and destructive results. I shall not here attempt to relate any of the sad events of that disastrous morning, as all such particulars will, of course, be afforded in full detail by the marine authorities; but I shall confine my brief remarks exclusively to the indications of the observatory instruments, and the probable course and extent of the cyclone. An idea appears to have gained ground that two revolving storms were raging in the Bay of Bengal at the same time, but this is decidedly contrary to all the evidence that has yet come under my notice. The account of the gale given by the Captain of the Peninsular and Oriental Steamer, *Mongolia*, shows most clearly that on the morning of April 30th, he had just overtaken and run into the south-eastern boundary of the storm. A well-timed easterly run took him safe out of the cyclone, though by no means into calm weather; but after sailing northward, alongside the revolving storm, upon turning towards Madras, the cyclone was again overtaken and entered upon, and the course of the ship had for the second time to be reversed, and time allowed for the cyclone to pursue its leisurely course on to the land and out of the way of the vessel. From such incomplete information as I have been able to collect, I deduce, with, as I conceive, much probability, that the cyclone originated, or rather acquired strength, in the Bay in about latitude 10° north, and longitude 82° east; that its centre moved at first very slowly, but at a slightly increasing speed, averaging not more than four or five miles per hour nearly north by west, and that, on reaching about $12\frac{1}{2}^{\circ}$ north latitude, it took a sweep round almost due west across the country, until it had expended its fury, and become almost broken up by the numerous hills encountered in its progress. The vast amount of aqueous vapour carried up from the sea by such a whirl, would, for the most part, pass over the heated lower land near the coast, to fall in torrents as soon as it reached a slightly lower temperature and came in contact with the hill tops about Arnee, Arcot, and Vellore, and here we find the lamentable havoc experienced due almost entirely to the excessive rain, and but little to the wind from which Madras suffered so severely. The principal meteorological conditions of Madras, from April 29th to May 3rd, inclusive, have been

projected on a chart by my son, the Assistant Government Astronomer, and exhibit at sight all the chief features of the storm. The barometer had been very slowly and gradually descending ever since the middle of April, but was very little below its average height for the time on the 28th instant. The weather had been fine with light passing clouds, the wind quite normal—viz.: from S.E., or S.S.E., with ordinary force of eight or nine miles per hour, and the temperature slightly above average in the shade, but a little below average in full sunshine. From the 29th ultimo, the barometer commenced its marked descent as indicated by the thick black curve in the projection, and by sunset on the 30th, showed unmistakably approaching bad weather. The rising wind and its ominous northerly direction; the cooler temperature, overcast sky, and above all the raging surf; making the embarkation of passengers per homeward bound steamer, *Peshawur*, very dangerous and all but impossible, were cautions not to be neglected. Throughout the 1st instant all these warnings became hourly more marked, and I can scarcely comprehend the hardihood of any captain, with or without orders, who had any reliance in the seaworthiness of his ship and the slightest idea of a Madras cyclone, remaining in the roads under such fearful odds. I concluded that, as a matter of course, all ships would have left the roads before sunset, and had they done so, and run southward before the wind, they might easily have passed the cyclone before it turned landward and been safe out of its reach. By midnight the storm had fairly commenced, and foreseeing its intensity I telegraphed (by means of the line used for firing the Fort Time Gun, which now passes through the Government Telegraph Office) a message for the Master Attendant, not as a warning for the shipping, which I supposed all cleared off to sea, but as an intimation that bad as matters then were, worse was to be expected. Till 3.30, a.m., I believe it was quite possible for any seaworthy well-prepared vessel to run off before the wind and be saved, but after that time all were doomed, or depended solely upon their anchors. The lowest reading of the barometer occurred at 8.30, a.m., on the 2nd instant—viz.: 29.288 reduced to 82°. At this time the centre of the cyclone was still out at sea, but fast approaching the land. The rapid rise of the mercury after reaching its minimum gave assurance that the worst had past. All trace of the well-known atmospheric tides was lost on this remarkable day. The usual reduced reading for the time of the year, at sea level at Madras, is 29.81, and before midnight on the 3rd, the mercury was again above average and the storm had died away. The temperature, as shown by a thin curve line on the projection, went down pretty considerably, but only very slightly at its minima. Thus, we find the maximum on May 2nd, 15° below that on April 29th; while the minima of the same day differed only by 4°. The depression

of the wet bulb, shown by the pendant thick bars below the temperature curve, indicate by their diminishing length the increasing moisture of the air, and the consequent mass of aqueous vapour being carried inland to work the Vellore mischief. The wind direction and velocity are furnished hourly from the anemometer sheets. The former is given in the usual nautical points. Its normal direction for the time by twenty years observations, is south ; but it became unsteady on April 29th, and quite abnormal afterwards. Its changes on the morning of the storm proved that the centre of the cyclone passed some miles to the southward of Madras, and it would appear not far from Sadras. Should such prove to be the case hereafter, when exact observations are available for the discussion of its path, the storm must have been considerably over 120 miles in diameter. The hourly wind velocities are coloured green and indicate the uniform velocity for the whole hour. The corresponding average hourly velocity is about eight miles. The highest velocity was, of course, when the centre made its nearest approach to Madras—viz. : between 8 and 9, a.m., on the 2nd, when it attained a maximum of fifty-three miles, about equal to a pressure of 14 lbs. per square foot. The proportion between absolute maximum of any individual gust and the uniform hourly force is unknown, but my own impression is that such gusts would never be found to exceed three times the average of the hour in which they occur. Lastly, the rain-fall was by no means large during the storm, though, driving before the heavy gusts, it seemed far more considerable than it really was, and gave a mistaken impression of an extraordinary downpour to all who were exposed to it. The total fall was 5·79 inches in three days.

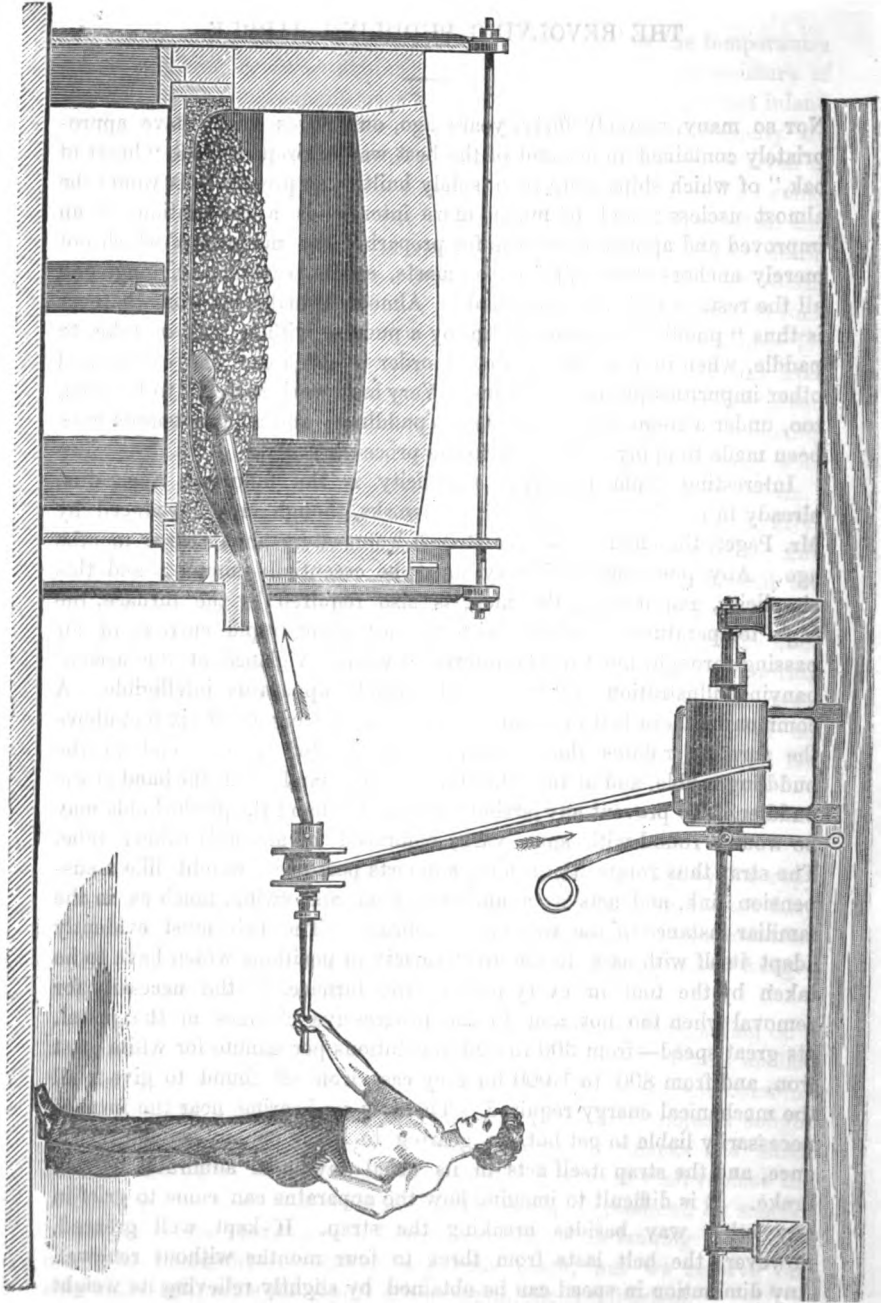
FRENCH IMPORT DUTIES.—The Board of Trade have received a copy of a decree of the French Government, fixing the rates of import duty on amomums and cardamoms (amomes et cardamomes). From countries out of Europe including the French possessions, 200f. per 100 kilog. ; from elsewhere, 240f. per 100 kilog.

PRIZE LIFE BOATS.—The Council of the Society of Arts, acting on a suggestion offered to them by Mr. Thomas Gray, have offered gold medals for the boats that shall best serve as ordinary ship's boats, and combine the qualities of life boats as far as possible. One of the objects sought to be attained by the Council is the providing of smacks and small coasters that only can carry one boat, with a boat that shall replace the ordinary cockle shell, and by which services may be rendered by smacks in taking crews off vessels in distress at sea, or in landing their own crews in emergencies. Trials have been made, but we reserve our comments until after the report of the committee is published.

THE REVOLVING PUDDLING RABBLE.

Not so many, scarcely forty, years ago, our pages might have appropriately contained an account of the best way of preparing the "heart of oak," of which ships were then solely built. At present this would be almost useless; and of much more interest is a description of an improved and approved process for preparing the material of which not merely anchors, but ships' hulls, masts, cables, capstans, rigging, and all the rest, in fact, are now made. Almost all malleable iron whatever is thus "puddled," or stirred up, by a puddler with a sort of rake, or paddle, when in a molten state, in order to get rid of the carbon and other impurities pig-iron contains. Very hard work indeed; to be done, too, under a tremendous heat is such puddling; and many attempts have been made to apply machinery to the process.

Interesting from its great simplicity is the following apparatus, already in use in several British ironworks, though only introduced by Mr. Paget, the engineer, to the British ironmasters about three months ago. Any puddling machinery must be essentially simple; and this simplicity, required by the men, is also required by the furnace, the high temperature of which, with the attendant rapid current of air passing through, must not be interfered with. A glance at the accompanying illustration will render the whole apparatus intelligible. A common leathern belt or strap, driven from shafting about six feet above the furnace, rotates the sheave, loosely jointed at one end to the puddling rabble, and at the other turning on a pin held in the hand of the puddler. To prevent any jarring action to his hand the pin he holds may be wound round with spun yarn, embraced by an india-rubber tube. The strap thus rotates the rabble, supports part of its weight like a suspension link, and acts as a universal joint and swing, much as in the familiar instance of the rotating hair-brush. The belt must evidently adapt itself with ease to the great variety of positions which have to be taken by the tool in every part of the furnace, to the necessity for removal when too hot, and to the progressive changes in the metal. Its great speed—from 300 to 800 revolutions per minute for white cast iron, and from 800 to 1,000 for grey cast iron—is found to give it all the mechanical energy required. There is no bearing near the furnace necessarily liable to get hot, no gearing to break on any sudden resistance, and the strap itself acts in its usual way as an admirable friction brake. It is difficult to imagine how the apparatus can come to grief in any other way besides breaking the strap. If kept well greased, however, the belt lasts from three to four months without renewal. Any diminution in speed can be obtained by slightly relieving its weight



off the belt, thus allowing more or less slip. On the other hand, any unusual resistance can be overcome by the puddler pressing the tool down on the belt. Simply by crossing the strap the rabble can be rotated from left to right, or *vice versa*. The tools, in spite of their extra weight, are easily removed from the furnace by taking them off the strap by means of a hook on a light chain, suspended near the furnace from the roof. The rabble can thus be changed in thirty seconds. The thing is singularly cheap, as can be seen at the first glance; and cheap tackle (it can scarcely be called a machine) means also cheap repairs. The great question of wear and tear, only safely determinable by long usage under the most varied circumstances, is, indeed, often forgotten when examining a new machine.

To those conversant with the metallurgy of iron, it is well known that the puddling process, having to be done by human muscular force, limits and restrains the development of the iron trade, and that the extension of this simple apparatus would mean a revolution in the iron trade.

ON OATHS.

(Continued from our August Number.)

THE next in antiquity and fame to the oath of allegiance is the oath of supremacy. The doctrine of the King's supremacy was asserted in the reign of King Henry VIII. by an Act of the year 1532, the preamble of which declares the King to be the head of the spirituality as well as of the temporality of the body politic, but no oath of supremacy appears to have been exacted till the first year of the reign of Queen Elizabeth. The sting of this oath in its original form lay in the declaration that the Queen is the head of the Church, an affirmation obnoxious alike to Roman Catholics and to Dissenters, and in the farther declaration that no foreign prince, person, or prelate, has or ought to have any jurisdiction ecclesiastical or spiritual within this realm. It was to be taken by every archbishop, bishop, and every other officer and minister, and every temporal judge, justice, mayor, and other lay and temporal officer, minister, and every other person having Her Majesty's fee and wages, the penalty of refusal being forfeiture of office. In the reign of James I. a statutory form was given to the oath of allegiance, which henceforth along with the oath of supremacy was actively employed as a means of oppression. These oaths, supplemented by the declaration of conformity with the Church of England, and the Sacramental test imposed in the reign of

Charles II., formed a barrier which it was supposed would be effectual against Puritans and Dissenters on the one hand, and Roman Catholics on the other. Lastly, after the revolution, the oath of abjuration was invented, and provision was thus made for preventing any but loyal subjects and staunch Churchmen from holding an office of importance in the State.

The system upon which these oaths and declarations were administered was, first, to make them a condition of taking office, and, secondly, to give a power of tendering them, or some of them, to persons who were not candidates for office. In both cases severe penalties were attached to a refusal to take them. Thus, by one statute, the oath of supremacy might be tendered to any person whatever by any two justices of the peace, and those who refused to take it were adjudged to be Popish recusants, convict, and might be proceeded against as such—that is to say, they made themselves liable, among other things, to a fine of £20 for every month during which they absented themselves from Church; they were disabled from holding offices or employments; from keeping arms in their houses; from maintaining actions or suits at law or in equity; from being executors or guardians; from presenting to advowsons; from practising in law or physic; they might not travel five miles from home unless by license upon pain of forfeiting all their goods; and might not come to Court under pain of £100. If the recusant were a married woman, she was liable to forfeit two-thirds of her dower, and during her marriage she might be kept in prison unless her husband chose to redeem her at the rate of £10 a month.

The penalties of recusancy were very far from being a dead letter. "In one night," says Hume, "fifty Catholic gentlemen in the county of Lancaster were suddenly seized and committed to prison on account of their non-attendance at Church. About the same time I find an equal number of Yorkshire gentlemen lying prisoners in York Castle on the same account: most of them perished there. These were every week dragged by main force to hear the established service in the Castle Chapel." The story of the trial of Father Campian, in the year 1581, is no doubt familiar to many. He was indicted for various treasons, none of which appear to have been proved. "Finally," says Butler, in his book of the Catholic Church, "came the overwhelming charge: 'You refuse,' said the counsel for the Crown, 'to take the oath of supremacy.' 'I acknowledge,' answered Campian, 'Her Highness as my governess and Sovereign. I acknowledge before the Commissioners Her Majesty, both *de facto et de jure*, to be my Queen. I confess an obedience due to the Crown as my temporal head and primate. This I said then; this I say now.'" Campian was condemned, and on the first of December following was led to execution. "He was dragged to it on a

hurdle, his face was often covered with mud, and the people good-naturedly wiped it off. He ascended the scaffold; there he again denied all the treasons of which he had been accused. He was required 'to ask forgiveness of the Queen;' he meekly answered, 'Wherein have I offended her? In this I am innocent. This is my last breath, in this give me credit. I have and do pray for her.' Lord Charles Howard asked him for which Queen he prayed—whether for Elizabeth the Queen? Campian replied, 'Yes, for Elizabeth your Queen and my Queen.' He then took his last leave of the spectators, and turning his eyes towards heaven, the cart was drawn away. His mild death and sincere protestations of innocence moved the people to such compassion and tears that the adversaries of the Catholics were glad to excuse his death."

The manner in which these oaths and declarations worked must at all times have been unsatisfactory. Scrupulous persons were, of course, hindered by them; but those of more robust conscience found them but a slight impediment. Every one has heard of the two thousand persons who, on the day of St. Bartholomew, in the year 1662, resigned their preferments, rather than stain their consciences with compliance with the Act of Uniformity. On the other hand, Hallam says, "The strictness used with recusants had the usual consequence of multiplying hypocrites; for, in fact, if men will once bring themselves to comply, to take all oaths, to practise all conformity, to oppose simulation and dissimulation to arbitrary inquiries, it is hardly possible that any Government should not be baffled. Fraud becomes an overmatch for power. The real danger, meanwhile, the internal disaffection, remains as before, or is aggravated." Even in the early times of our history, it was found that where a portion of an oath was regarded as immaterial, it was in practice taken as a matter of course. Thus in the case of the oath of the champion, already referred to, it was originally necessary that the champion of the demandant should swear that he, or his father, "Saw the seisin;" but a statute of the year 1272, recites, that it seldom happened but that they which take this oath are foresworn, in that they swear to this effect, and accordingly it repeals the obnoxious portion of the oath—the most sensible thing to do under the circumstances. Ordinary mortals have, as a rule, acted upon the example of Tom Fashion in the *Relapse* :—

Fashion.—I'll go into the army.

Lory.—You can't take the oaths: you're a Jacobite.

Fash.—Thou may'st as well say I can't

Take orders, because I am an Atheist.

Lory.—Sir, I ask your pardon: I find I

Did not know the strength of your

Conscience so well as I did the

Weakness of your purse.

Sydney Smith mentions a case (referred to in the Report of the Oaths

Commission) where no less a person than the Archbishop of Canterbury treated an oath with scanty respect, taking it, not in person, but by the medium of a gentleman, "sent down in the Canterbury fly, to take the Creator to witness that the archbishop, detained in London by business or pleasure, will never violate that foundation of sanctity, over which he presides." In Sydney Smith's opinion the archbishop had not observed the terms of the oath so taken; a circumstance which gives rise to ingenious speculation on his part whether the archbishop, or the proxy, had incurred the guilt of perjury. But for a heroic example of this fortitude of conscience, we must go back to the times of ancient Greece:—"Callippus had determined to get rid of Dion by whatever means; and being suspected, and finding a very strict inquiry instituted, under the auspices of the female relatives of Dion, came forward, and with tears, denying the charge, offered to bind himself by any pledge which they might require. They required him to 'Swear the great oath.' The form of that oath obliged the individual who bound himself by it, to go down into the consecrated fane of Ceres and Proserpine; and there, after the performance of certain religious rites, to clothe himself in the purple robe of the goddess, and taking a burning torch in his hand, 'To swear the great oath.' Callippus, having done all this, and having on that oath denied all guilty intention, treated the divinities with such ridicule that he waited for the execution of his purpose till the feast of the goddess by whom he had sworn came round, and then committed the murder on the very holiday." ("Tyler on Oaths," p. 120.) Yet, in spite of the consideration that the test of an oath will only operate as a bar to honest men, and will be taken with impunity by rogues, it is remarkable with what tenacity such tests have been adhered to by the orthodox supporters of Church and State. "No eel," says Sydney Smith, "in the well-sanded fist of a cook-maid, upon the eve of being skinned, ever twisted and writhed as an orthodox parson does, when he is compelled by the gripe of reason to admit anything in favour of a Dissenter."

A minor evil arising from political oaths is, that they have given rise to some of the most complex Acts in the Statute Book. An oath or declaration was no sooner established than it became subject to modifications, to suit the variable exigencies of the time. If made under the influence of a panic, as soon as the panic passed away, the oath or declaration was not repealed, but its terms were modified, and numerous classes of persons were exempted from the necessity of taking it. On the other hand, if the machinations of the party for whose exclusion from power the oath or declaration was framed, became more formidable, Acts were passed imposing the test upon a larger number of persons, and punishing any neglect to take it with severe penalties. The result

of this legislation is, that at present it is difficult in some cases to say what oaths ought to be taken, and there may even be a doubt whether many excellent persons, now holding office, may not, during the course of their lives, have incurred the penalties of some of the older Acts for not taking the oaths thereby prescribed.

NAUTICAL SURVEYING.

“An Introduction to the Practical and Theoretical Study of Nautical Surveying.” By John Knox Laughton, M.A., etc. London, Longmans, 1872.

Mr. Laughton is one of those men, who, in treating of any subject, bring the whole strength of their minds to the work in hand. It may always safely be assumed that in Mr. Laughton's books the reading will be easy, because he invariably goes straight to the point, and does not run away from it to wander discursively into other subjects, or into fine phraseology. His writing is generally marked by earnestness and practical good sense, and in the little book now before us, he fully maintains his reputation. Mr. Laughton remarks, in his preface, that “It is scarcely necessary to say that a work of this kind has small pretensions to originality.” In view of the numerous works on marine surveying, which have at different times appeared, and the chapters devoted to the subject in the legion of books on navigation and seamanship, it cannot be doubted that a new book about it could hardly lay much claim to originality; it certainly is not a novel subject. But there is always room for a good book; let a subject be even done to death, yet new treatment can restore it to a fresh and palatable condition, and this is what we consider has been done by Mr. Laughton in this introduction of his. The subject of nautical surveying has developed, little by little; and day by day, the theory and practice are improving and becoming better known. But in the course of its growth to its present condition, it has been associated with numberless errors; the data for observations in many cases have been vague and shifting, like the sea itself, and it was scarcely to be wondered at that a science, founded on such unstable materials, should have absorbed in its growth much uncertainty and faultiness. To our minds the most valuable feature of Mr. Laughton's work is, that he divests the subject of all guess-work, and other extraneous matter, and proceeds with the coolness and precision of a mathematician to lay down propositions to illustrate his theories. But he very truly says, that the theory is simple enough, and that “the difficulty of surveying lies wholly in the practice of it.”

As Mr. Laughton explains his theories, they are certainly simple and intelligible enough, and they are mostly the results of mathematical calculations, carefully worked out. The practical part of his work deserves great praise; although Mr. Laughton has, probably, not had very much practical experience of surveying, yet he has fully grasped the importance of details which have been overlooked by other writers. His advice to young officers is most excellent; he tells them how to choose a good sextant, and when they have got it, how to keep it in good order; he shows very clearly how to obtain by different methods bases for triangulation; he describes how charts are constructed and graduated, and in connexion with this portion of his work, he very wisely observes: "During the whole progress of a survey it should be steadily borne in mind that, with whatever skill and labour it may be executed, it is only the means to an end; and that its real merit will depend less on the science and taste which have been employed in its construction than on the practical utility of its results."

The author then goes on to consider the important question of soundings, and gives some very useful suggestions to youthful surveyors. He also advises surveyors to be very careful as to placing dependence upon charts, especially compiled or old charts. He advises them rather to rely on their own observations for determining their positions, and recommends the sextant observations above all.

Mr. Laughton concludes his little book with a chapter on running surveys, in which *inter alia* he urges constant verification by the surveyor of the soundings in harbours and elsewhere on account of the continual changes which are taking place in the contour of the bottom.

We have to thank Mr. Laughton very much for this contribution to nautical science. It is such books as these which give an impetus to science, by placing knowledge within the reach of the young and vigorous. Mr. Laughton tells us that "the fulness of our knowledge introduced a more rigorous and exact method of surveying," that is, as compared with the methods of fifty years ago. He goes on to say that "In all parts of the world surveyors are at work, no longer to sketch in a rough outline with rude approximation, but to form a chart thoroughly trustworthy and rigidly accurate not only above water but below." And in reading this we cannot but think that Mr. Laughton's book will help considerably to bring about a still more satisfactory state of things in the future.

TONNAY-CHARENTE.—ABOLITION OF NAVAL PASSPORT.—Captains of all vessels bound to the port of Charente are now enabled to pass through the Rochefort Dockyard without having to go through any formality whatever.

PORT SANITARY AUTHORITIES.

THE Public Health Act, which has just received the Royal Assent, contains several clauses that will, for good or evil, exercise a considerable influence over the floating population of this country, as well as all those interested in the Mercantile Marine. When legislative enactments are framed, it should be the care and concern of the framers that in creating new and abolishing old powers, the so-called vested interests of the communities chiefly concerned shall not suffer. And in this case, although it cannot be denied that the sanitary condition of a ship requires as much supervision as that of a house, it behoves us to take care that, in the exercise of any new powers, commerce does not suffer.

The 18th Clause of the Act above-quoted gives power to the Local Government Board "to constitute permanently any sanitary authority whose district, or part of whose district, forms part of, or abuts upon, any part of a port in England, or the waters of such port, or any conservators, commissioners, or other persons having authority in or over such port, or any part thereof, the sanitary authority of the whole of such port or of any part thereof." And the clause also recites that, "A port shall mean a port as established for the purposes of the laws relating to the Customs of the United Kingdom." So that, subject to the dictum of the Local Government Board, all vessels in or within the district of any port may be placed under sanitary surveillance in the same way as houses and their occupiers in metropolitan, urban, and rural districts throughout the country. It remains, of course, to be seen whether the Local Government Board will put these powers into force continuously, or only in cases of emergency, as during the presence of an epidemic. With the cost of the matter we have little or nothing to do. It cannot be denied that a great deal of disease is propagated and perpetuated by the foreign-going as well as by the coasting vessels, and it is clearly the interest of owner, master, and crew to keep vital material, as well as running gear and hull, in sound condition. Some provisional arrangements were made [in August of last year at most of the outports, under the auspices of the Medical Department of the Local Government Board, when we were threatened with cholera. Mr. Netten Radcliffe, one of the inspectors on Mr. Simon's staff, visited forty-five ports; the result of which was, that at Blyth, Boston, Chatham, Cowpen, Dover, Faversham, Folkestone, Goole, Grimsby, Hartlepool, Harwich, Hull, Ipswich, King's Lynn, Lowestoft, Middlesboro', Portsmouth, Rochester, Scarborough, Sheerness, Southampton, Sunderland, Sutton Bridge, the Tyne Ports, Wisbech, and Yarmouth, medical inspectors were appointed, and in

many instances floating or other hospital accommodation was provided. As the Orders in Council that produced these measures are still in force, most of our outports are already provided with a fair amount of efficient sanitary machinery, and have but to keep it in good working order. Liverpool up to this time remains in a transitional state, but the medical officer of Customs at that port has, during the past year, undertaken a preliminary inspection of all vessels arriving from so-called "suspected" places, and this arrangement appears to work very well. It seems, indeed, that up to the present time the metropolis has been, of important ports, the only city unprotected by any sanitary machinery other than the Customs have, here as elsewhere, always afforded. The cause of this unsatisfactory fact is not far to seek. There are, in accordance with the provisions of the Sanitary Act of 1866, some sixteen waterside authorities, all of whom are severally and independently responsible for the health of the floating population of the Thames, and of its docks. The anarchy resulting from this state of things was so glaringly apparent last year, that Dr. Buchanan, the senior inspector of the Local Government Board, after much exertion, succeeded in inducing the formation of a committee of delegates from the riparian districts of the river, which was called the Thames Shipping Inspection Committee, and at their request Mr. Harry Leach, of the *Dreadnought*, submitted to them a plan for the systematic inspection of the river and the docks, which might possibly have taken effect, had cholera appeared. But no preventive system was adopted, for it appeared that the Committee had neither legal status, nor any power, whatever, to raise money. They have met and deliberated, but, practically speaking, have done nothing. The weakness of their position, and the unprotected state of the port, was so generally acknowledged that, at the request of the city authorities, a special clause was inserted in the Public Health Bill, making the corporation the sanitary authority of the port, and that body has, greatly to the satisfaction of Mr. Stansfeld, simplified the rating question by liberally offering to defray the cost of the work out of the municipal funds. We have no reason to doubt that the work will be well planned, and well carried out. The port of London actually reaches from Teddington to below the Nore, and includes also 488 acres of docks. Hence there are manifest and manifold difficulties in the way of maintaining any effective sanitary supervision that shall not embarrass commerce. All preventive work must, of course, be performed at Gravesend, and a hospital must be stationed there permanently, as also one somewhere about midway between London Bridge and Woolwich, for the reception of any cases of sickness that may occur in the port or the docks. The old *Dreadnought* is far too large and unwieldy a ship for the latter purpose, and, indeed, it would be well to follow the

example of the Tyne ports authorities, and fit up two small vessels, one to be stationed in Greenwich Reach, and the other near Gravesend, each capable of receiving about twenty patients. But these are matters of detail. If the city authorities work energetically, and provide themselves with an active and efficient superintendent, there is no reason why the Port Sanitary Clauses of this new Act should not work well to the benefit of all concerned.

SHIPBUILDING ON THE CLYDE.

WE extract the following from the report of the Iron and Steel Institute. This Institute has just held a sitting in Glasgow, and have been indulging in an excursion down the Clyde. It is, perhaps, advisable we should point out that the firms are arranged not at all in the order of their importance in the commercial world, but in accordance with their geographical position. Those nearest Glasgow, and consequently farthest up the river, are named first. The largest ship under construction—viz., *The City of Chester*, for Mr. William Inman—is being built by Messrs. Caird and Co., the firm named last on the list:—

“ Since Henry Bell's *Comet* was launched, in 1812, there has been an immense development of steam shipbuilding on the Clyde. The annual returns for shipbuilding on the Clyde now amount to fully 200,000 tons. The following are a few notes, from information kindly supplied by various shipbuilding firms, regarding the present state of the shipbuilding and marine engineering industry, together with a few interesting facts referring to the former history of the trade. The firms are named in something like the order of their works on the banks of the river.

“ FINNISTON STEAMSHIP WORKS Co., Lancefield Quay.—Chiefly engaged building steam engines for Anchor Liners; have in hands no fewer than nine pairs of marine engines; ten years in business.

“ ROBERT NAPIER & SONS, Vulcan Foundry, Lancefield Quay.—Shipyard at Govan, covering about 24 acres, with river frontage of about 1,100 feet; employ from three to four thousand hands; first engines constructed in 1828 for vessel built by Lang, Dumbarton firm; also built for Royal Navy *Invincible* and *Audacious*, 3,700 tons each, and other men-of-war.

“ BARCLAY, CUBLE, & Co., Stobcross and Whiteinch.—About 50 years in existence; engine works, ship docks, and building yard, at Stobcross, occupy 11 acres, river frontage about 620 feet; Whiteinch yard about 18 acres, and river frontage 850 feet; hands employed, about 1,900;

launched last year, of sailing vessels, 6,800 tons; steamers, 8,800 tons, of 900 horse-power; in hands, or contracted for, 14,500 tons of shipping, with 2,800 horse power of engines.

"J. & G. THOMSON, Shipbuilder and Marine Engineers, Clyde Bank Foundry, Shipyards at Govan and Dalmuir.—Twenty years engaged as shipbuilders; last vessel at Govan, now building; yard at Dalmuir, just commenced, 32 acres, and river boundary about 1,820 feet; average number of workmen, 1,800; average number of launches annually, six; tonnage, 12,000; horse power, 2,000; about 20,000 tons of shipping, with 8,000 horse power of engines, now in hands.

"DOBBIE & Co., Govan.—Five steamships and two sailing ships now in hand; total tonnage, 7,010 and 950 horse power of engines.

"A. & J. INGLIS, Pointhouse, Govan.—Twenty-five years as marine engineers, and ten as shipbuilders; engine works, Warroch Street, Glasgow, cover $2\frac{1}{2}$ acres, and shipbuilding yard 12 acres, with about 1,200 feet of river frontage; now engaged on 197th pair of engines and 105th ship; total tonnage in hands, 15,470, with 2,050 horse power of engines; patent slip dock, capable of taking vessels of 2,000 tons for repairing or lengthening; steamers lengthened last year, five, with tonnage of 4,000 tons; about 1,500 hands employed.

"TOD & MACGREGOR, Partick.—Iron shipbuilders for 37 years; dock and shipyards nearly 20 acres, river frontage of 600 yards; workmen employed, 1,700; three vessels building, aggregate tonnage, 7,600, with engines of 1,700 horse power; graving dock, 500 feet long and 56 feet wide at gates; hydraulic slip dock, capable of taking in vessels of 1,500 tons.

"JOHN ELDER & Co., Fairfield, Govan.—Shipbuilding, 12 years; total area of works, about 42 acres; river frontage at Fairfield, about 1,800 feet; total number of workmen employed at Fairfield Engine Works, Centre Street, and Boiler Works, Dale Street, Glasgow, about 3,600; launched last year, twelve iron steamships and two sailing ships of total tonnage, 81,889 tons, and 5,275 horse power engines; at 31st December last, amount of work in hand, or contracted for, 85,155 tons, and 7,865 horse power of engines.

"BARCLAY, CURLE, & Co., Shipbuilding Yard, Whiteinch.—Included above.

"THOMAS WINGATE & SONS, Whiteinch.—Engineers, 51 [years]; iron shipbuilders, 42 years; works cover about 12 acres; about 1,000 hands; nearly 10,000 tons of shipping on hands, with engines of 1,800 horse power; this firm engined the *Sirius*, the first vessel that steamed across the Atlantic; built all the Tyne dredger fleet (of three double dredgers and eleven steam hopper barges) and dredging plant for Barrow, Dublin, Rio Grand do Sul, Bagdad, Guayaquil, &c.; now building three screw steamers for new State Transatlantic Line.

"ALEXANDER STEPHEN & SONS, Linthouse, Govan.—Upwards of 50 years engaged in shipbuilding; works cover about 82 acres, river frontage about 1,200 feet; can lay down nine vessels of the largest size; employ 2,400 hands; launched seven vessels last year; have ten vessels in hands—four steamers of 4,000 and 600 horse power each, two of 2,400, tons and 200 horse power each, one 2,000 tons and 800 horse power, the others smaller.

"AITKEN & MANSEL, Whiteinch.—No returns.

"J. G. LAWRIE, Whiteinch.—No returns.

"CHARLES CONNELL & Co., Whiteinch.—No returns.

"W. SIMONS & Co., Renfrew.—Fifty-six years in business; works cover 18 acres; about 1,000 hands; seven steamers and three hoppers at present in progress, two of the steamers being dredgers; total tonnage, 9,000 tons; all with compound engines; have constructed 176 vessels; one of the dredgers in hands for the Egyptian Government, the other for the North Eastern Railway Company; dredging plant a specialty of the firm.

"HENDERSON, COULBORN & Co.—No returns.

"J. & G. THOMSON, Ship Yard, Dalmuir.—Included above.

"A. M'ILLAN & SON, Dumbarton.—Shipbuilders (only) for 88 years; works cover 5 acres; river frontage, 700 feet; about 800 hands; last year's launches, seven steamships of 9,200 tons and 1,250 horse-power; at present on hand, six steamers of 9,100 tons and 1,200 horse-power; large graving dock for repairing and lengthening vessels.

"WILLIAM DENNY & BROTHERS, Shipbuilders, [and DENNY & Co., Engineers, Dumbarton.—Shipbuilding nearly 28 years; marine engine building, 21 years; works cover 14 acres; river boundaries about 500 yards; average number of workmen during last five years, about 2,800; average tonnage for five years, 14,000 tons per year; horse-power of engines, 2,000 per annum; about 24,000 tons of steam shipping, with 4,000 horse-power of engines in hands, or contracted for.

"BLACKWOOD & GORDON, Port Glasgow.—Shipbuilding, 22 years; grounds, 8 acres; river boundary, 500 feet; workmen employed, about 900; last year's launches, nine vessels of 7,600 tons, and 1,070 horse-power; on hand, and contracted for, eight of a total of 6,000 tons, and 950 horse-power; four pairs of engines built last year, and five pairs now on hand for other shipbuilding firms.

"ROBERT DUNCAN & Co., Port Glasgow.—Shipbuilders (only), for nine years; including dock, 6 acres of ground and 600 feet of frontage; employ an average of 800 hands; have launched 62 vessels (more than half being steamers) of an aggregate tonnage of 56,000 tons register; have on hand ten vessels of a total of 16,000 tons, eight being steamers, one of 4,000 tons, and three of 3,000 tons each; machinery made by

Finnieston Steam Ship Works Company, Glasgow, and other engineers ; in this yard John Wood, father of the shipbuilding art in Scotland, built and launched in 1812 Henry Bell's *Comet*, the pioneer of steam navigation.

“JOHN REED, Port Glasgow.—No returns.

“H. MURRAY & Co., Port Glasgow.—Shipbuilders (only), for six years ; extent of work, 4 acres, and river boundary, 250 feet ; hands employed, 800 ; vessels launched last year, nine, all steamers of 8,061 tons, and 460 horse-power ; five steamers at present in hands.

“CUNLIFFE & DUNLOP, Port Glasgow.—Marine engineers and shipbuilders ; two years in business ; works cover 7 acres, with 850 feet of river frontage ; works previously occupied by Laurence Hill, who built the *Tasmanian*, in 1854, then the largest screw steamer of her day, now one of the Royal West India Mail Liners.

“ROBERT STEELE & Co., Greenock.—Shipbuilders since 1796 ; marine engineers for last nine months ; building yard, graving dock, and basin, and slip dock cover 12 acres ; river frontage about 560 feet ; firm have built during last ten years 46 iron vessels of a total of 58,000 tons ; and 27 wooden and composite vessels of 18,000 tons ; at present on hand, or contracted for, three iron steamers, of 9,600 tons ; two wooden vessels ; about 1,300 hands employed, and soon to be much increased.

“CAIRD & Co., Greenock.—As marine engineers, 47 years, and as shipbuilders upwards of 80 years ; area covered by works about 20 acres ; river frontage, 1,000 feet ; about 3,500 workmen and apprentices ; built nine vessels of 26,200 tons, and 5,000 horse-power last year ; in hands, and contracted for, thirteen vessels—one being over 4,000 tons, and 850 horse-power, and twelve others, about 3,000 tons, more or less ; for various companies have built, or have in hands, sixty-three iron ocean steamships, probably the largest number yet built by any individual firm.”

CHINA.—ISLAND OF HAINAN.—A Customs Inspectorate at the Port of Kinngehov has been installed.

PORTUGUESE NEW IMPORT DUTIES.—The Board of Trade have received from the Secretary of State for Foreign Affairs copies of two decrees of the Portuguese Government, imposing import duties of 10 reis (0·58d) per kilogramme on iron chains and cables other than cables for ships ; of 150 reis (8d) per kilogramme on canvas and sail cloth applicable to purposes other than that of being made into ship's sails ; and of 80 per cent. ad valorem on buttons made of any vitrified substance or mass, and not included under manufactured articles, either of glass or crystal, or of porcelain.

THE WEATHER IN THE BRITISH ISLES AND NEIGHBOURHOOD DURING JULY, 1872.

THE month of July opened with cloudy, damp weather throughout the north-west of Europe, the prevailing winds being westerly and south-westerly, but very variable and light. On the 2nd the weather became finer, and the sky cleared except on our western and northern coasts, where it remained showery. On the 5th, clear and calm weather was general in France and Great Britain, but Ireland continued to be the land of showers. A considerable change then took place. Clouds increased, the wind became northerly at the western stations, and in the more central and southern counties thunderstorms with heavy rain set in. The variations in the amount of cloud and temperature were remarkable. Thus, on the 6th, the maximum heat registered in the shade was 61° both at Pembroke and Scilly, while just across the mouth of St. George's Channel, at Roche's Point, it rose to 80° ; in the south-east of England it was even higher. From this time conditions were still more unsettled, and heavy thunderstorms occurred daily in different parts of the country. The atmosphere was extremely close and sultry, frequently feeling like a vapour bath. The rains were exceedingly heavy locally, and though the sky cleared occasionally, its normal condition was cloudy and dull. The northerly wind which was felt in the west on the 6th, gradually extended to the rest of our islands by the 8th, and reduced the temperature very much as it did so. On July 10th the southerly current again showed itself in Ireland and the west of Great Britain, and simultaneously a temporary clearance of the sky occurred in the more eastern parts of the country and the south of France. On the following day the southerly wind had spread over the whole kingdom, and though on the Continent the weather was beautifully bright, in our own country it was cloudy, sultry and damp, and thunderstorms were experienced throughout nearly the whole of England. On the 13th the wind again veered to north at our northern and western stations, but clouds and showers continued with violent thunderstorms until the 16th, after which a slight improvement was observed. On July 20th the weather was much clearer in the south and east, and remained so for several days, during which time the temperature was very high. During the night of the 21st the thermometer in London did not fall below 69° , and about this time thunderstorms again burst over the northern counties, and spread rapidly to the remainder of the kingdom. The 25th was even exceptionally stormy in a very stormy month, hardly any portion of the country escaped; the high temperature, combined with the immense quantity of moisture which fell, rendered the air unusually oppressive. In Scotland a great deal of fog occurred in the latter part

of the month. After the 28th the weather was cooler, and northerly winds were gradually established on our coasts.

During the entire month the range of *barometrical pressure* was very small, though the changes were frequent. Numerous slight depressions accompanied the thunderstorms in their passage over us, the most clearly defined being one which travelled from the north of France across the south and south-east of England on the 7th and 8th, leaving in its rear the colder northerly winds which were then felt.

Temperature was very high generally, but especially from the 5th to the 7th, and from the 20th to 28th. In the former period the maximum shade temperature was from 80° to 85° over the greater part of England; while in the latter it is reported to have reached 91° at Nottingham on the 22nd, 88° at several places on the 25th, and 90° at Greenwich.

The wind was very variable in the early part of the month, but chiefly south or south-west from the 18th to the 27th, and was light generally. No gales were reported.

Thunderstorms were extremely frequent and violent, and the rain accompanying them was exceptionally heavy. Thus on the 6th three inches fell at Barnstaple in the day, two and a half at Rhayada, two at Bodmin, and one and a half at Plymouth. On the 7th one and a half inches fell at Dumfries, and an inch at Holyhead and Pembroke. An inch fell at Cambridge, and two near Grimsby on the 12th; an inch at North Shields on the 18th; nearly two inches at Bidston, and almost one and a half at Bury St. Edmunds on the 23rd; a similar quantity at Selbourne (Hants) on the 24th; an inch or rather more at Rhayada, Greencastle, and Donaghadee on the 25th; one and a quarter at Galway on the 26th, and at Barnstaple on the 29th. We have here mentioned only those instances where an inch, or more, fell in one day, but it should be borne in mind that in the majority of cases the fall occurred in a much shorter space of time than twenty-four hours.

NIGHT PASSAGE OF DARDANELLES.—BOARD OF TRADE.—During the prevalence of cholera at Odessa, the permission for the night passage by the Dardanelles by outward-bound vessels is suspended.

PORTUGAL.—IMPORT OF STEAMERS.—A recent decree of the Portuguese Government, extends to the end of 1874, the period during which foreign-built steamers may be imported into Portugal free of the duty imposed upon transfer to the Portuguese flag, provided that such vessels are owned by Portuguese subjects, or by companies sanctioned by a decree of the Portuguese Government, and navigated in accordance with the national law.

CORRESPONDENCE.

SHIP-CAPTAINS AT KERTCH.

To the Editor of the Nautical Magazine.

SIR,—*Ecce iterum Crispinus.* As my first appearance in the *Nautical Magazine** has created great excitement among a certain class of shipmasters, I must request you to accord a space for the following remarks:—

Shortly after the partial reproduction of my article in the *Shipping Gazette*, and the arrival of that paper in Kertch, the agents, shipchandlers, and others *hujusmodi generis*, combined to excite the shipmasters, and a deputation of seven, most of whom I believe to be men of proper conduct, three being well known to me as such, waited upon me, very foolishly, and asked for an explanation of the article in question. I say foolishly, because, to use a common-place expression, they made it appear that "the cap fitted," which it certainly did not with all of them. The deputation consisted of the master of the *Spring*, Todd, the master of the *Statesman*, the master of the *Arethusa*, the master of the *Elizabeth*, the master of the *Forest Grove*, the master of the *Sternchase*, and the master of the *Rose*.

One corrected me by stating that *he had* received a present from the Russian Company's agent. If, unfortunately, he did so, it certainly was not during the last season, and since the arrival of the present agent, with whom I had the privilege of becoming acquainted some years ago, before I arrived in Russia, and whom I have frequently heard complain that he could do but little business with English captains, because they nearly always wanted a present, commission, or percentage, which he resolutely persisted in refusing.

Another of the deputation stated that every shipowner treated my assertions with contempt, and received them with incredulity. This may be the case, but *stat contra ratio, et secretas garrir in aures* that these men saw approaching the inevitable destruction of a system neither creditable to themselves nor profitable to their employers. I may add that I have already received a few very kind letters from ship owners, plainly contradicting the above assertion, for they thank me for my "startling exposure."

Having casually remarked that as my article could in nowise affect those who did their duty, and that by their complaining I might be led to suppose that they were culpable, I have received no more deputations *ad hoc* nor *usque hoc*.

* *Nautical Magazine* for June, Vol. xli., No. VI., page 491.

But, of course, much discourteous language has been spoken, and impotent threats used, especially by the master of the *Spring*, Crawford,—not to be confounded with the *Spring* commanded by Captain Todd, a truly honest and upright man, grown grey in the service. It is not Alexander the Great, but Alexander the Coppersmith, who has done me great evil so far as the *garrula lingua nocet*. The master of the steamship *Criterion*, has also offended in this respect. I have thought it right to report him to the Board of Trade, less for his words than for his actions in committing a gross breach of discipline, by tearing up and throwing into the sea, in the presence of a considerable multitude, a summons from me to appear at the Consulate, and not only disobeying it, but very kindly suggesting that being a powerful man he would also prove that he was a brave man by throwing a sexagenarian Consul into the sea after his summons.

The former having only employed his *fatida lingua*, or dying kick is sheltered from what he deserves under the all-powerful protection of his insignificance. I take no notice of insolence, any more than we do of a kick from a jackass, unless it be too public:—

Had'st thou not thus, with insult vain,
Provoked my patience to complain,
I would conceal thy meaner birth,
Nor trace thee to the scum of earth.

When I look back to six years' residence in Kertch I find, on referring to my notes, one captain, very drunk, trying to force a sovereign into my hands to prevent me from reporting him; another, when sent for because he had been seven days here without producing his articles, coming only to tell me that he did not consider I had any jurisdiction over him; and another threatening to inform the Board of Trade how the Kertch Consulate was carried on, because I raised an objection to his claiming £600 for having picked up, *en passant*, in the Azof, the crew of the *Constance* suddenly capsized. Others (and their name is legion) have been picked up very drunk in the streets, kindly accommodated with a night's lodging by the police, and taken care of when they were utterly incapable of taking care of themselves; others have been missing from their ships for several days, until I raised a "Hue and cry" after them; others, on entering my office, have held out their hands familiarly, and fallen down in a filthy state of intoxication; and finally others have gone down to the grave, labouring under *delirium tremens*, which only one cause produces.

Are not all these things written in a book, and do not shipowners know them, or hearing of them, can they receive them with contempt and incredulity? I trow not. And I repeat, again, that we have Glaze-

brooks and Halletts, Todds and Greys, and *many others*, whom I am willing to believe devoted to the interests of their owners. But I also repeat that we have many in charge of ships sent to these parts, who, I unhesitatingly say, and I fear not to put my name to what I write, are a disgrace to their country—a disgrace to their owners—a disgrace to humanity. And to those owners who will not take heed, I can only say, as it was said of those who were joined to their idols, "Let them alone." If they are satisfied, I *must* be, although they see but one—the best side of the picture at home, while I am forced to see the *revers de la medaille* abroad.

Yesterday morning early, I performed the funeral service over one who had died from *delirium tremens*, a captain of one of our leading shipowners, who was stretched on a bed of sickness for five days, in one of those horrible houses I have alluded to, under charge of those ministering angels—women, who certainly proved no ministering angels to this sick man. Restoratives, peculiar to the house, were administered; but no information as to his state reached me till the Saturday, a few hours before his death, when the angels became alarmed.

They know well that if I had been informed of his condition, I should not have allowed him to remain in their house one hour, whereas they have this morning presented me with a bill of 152 roubles, about £21 8s. a day, merely for his room, which I am informed was more like a closet, and so filthy, that I was persuaded not to visit it, as I had intended. I have handed over this bill to the Governor, who will instruct the police to investigate the matter.

Shipowners—you also may receive a telegram from me at noon:—"Master dangerously ill here—*delirium tremens*." And at three p.m., another, "Master is dead—whom shall I name in his place." Despise and disbelieve all that I write, but remember, *verbum sat sapientibus*, a word to the *wise*. And to those who wish to profit by the result of a sad experience, which prompts this article, I will only add, *Adsum qui feci*.

Kertch, August 5, 1872.

PETER BARROW.

LEEWARD ISLANDS.—Patrick Burns, Esq., has been appointed by Her Majesty to be a member of the Executive Council of the Leeward Islands.

SENEGAL: CUSTOMS' DUES.—The President of the French Republic has issued a decree modifying certain Customs' Dues in Senegal. Arms and munitions of war are now to pay 15 per cent. of value; leaf tobacco, 10 per cent.; other goods 5 per cent. Export duties from the dependencies of Goree on colonial products of all kinds, 5 per cent.

OUR OFFICIAL LOG.

TOMBS OF ENGLISH ADMIRALS.—The following list of some of the tombs of famous sea commanders, extracted from the Report of the Sepulchral Monuments Committee, recently presented to both Houses of Parliament, may be of interest to our readers :—

- GERVASE ALARD**, Admiral of Cinque Ports, *d.* 1810. Parish Church, St. Thomas, Winchelsea, Sussex. Stone and marble tomb, canopied, with recumbent effigy.
- STEPHEN ALARD**, Admiral of Cinque Ports, *d.* 1880. Parish Church, St. Thomas, Winchelsea, Sussex. Stone and marble tomb, with canopy.
- SIR HUMPHREY LITTLEBURY**, joint Admiral in Chief, *d.* 1840. Parish Church, Holbeach, Lincoln. Stone altar tomb, with recumbent effigy. Not in original site, but in fair preservation.
- SIR REGINALD COBHAM**, K.G., Admiral of King's Fleet, from mouth of Thames westward, 1844-1848, *d.* 1861. Parish Church, Lingfield, Surrey. Marble altar tomb, with recumbent effigy.
- RICHARD FITZALAN**, third Earl of Arundel of that line, K.G., Admiral of Western Seas, *d.* 1876. Chichester Cathedral, Sussex. Tomb, with recumbent effigies, in Caen stone, of himself and Eleanor of Lancaster, his wife. Probably removed from Lewes Priory, where he was buried.
- SIR HUGH CALVELEY**, Admiral of England, Governor of Calais, afterwards of Guernsey, distinguished commander in French and Spanish wars, *d.* 1894. Parish Church, Bunbury, Chester. High tomb, with effigy in alabaster. A very beautiful design.
- JOHN HOLLAND**, K.G., Duke of Exeter and Earl of Huntingdon, Admiral of England, Ireland, and Aquitaine, *d.* 1446, St. Katharine's Hospital, Regents Park. Altar tomb, with recumbent effigy and canopy in stone. Removed about 1826 from the collegiate church of St. Katharine, by the Tower of London.
- JOHN RUSSELL**, first Earl of Bedford, K.G., Lord High Admiral, *d.* 1555. Parish Church, Chenies, Bucks. Alabaster tomb with effigies.
- EDWARD CLINTON**, K.G., Earl of Lincoln, Lord High Admiral, *d.* 1584. St. George's Chapel, Windsor, Berks. Altar tomb, with two recumbent effigies.
- CLEMENT PASTON**, Naval Commander under Henry VIII. and Edward VI., Mary, and Elizabeth, *d.* 1597. Parish Church, Oxnead, Norfolk. Alabaster effigy on marble tomb.
- GEORGE, EARL OF CUMBERLAND**, K.G., last male heir of Cliffords, Naval Commander, *d.* 1605. Parish Church, Skipton, York, W.R. High marble tomb.

- GEORGE VILLIERS, K.G.**, Duke of Buckingham, Lord High Admiral, *d.* 1628. Westminster Abbey. Marble altar tomb, with two recumbent effigies. A monument (with an urn, possibly containing the heart) is in St. Thomas's Church, Portsmouth.
- ROBERT BERTIE**, Baron Willoughby d'Eresby, first Earl of Lindsay, Lord High Admiral, *d.* 1642. Edenham Church, Lincoln. Black marble tablet, incorporated in a monument to other members of the family.
- SIR THOMAS ALLIN**, Bart., Admiral of the Fleets, British and Mediterranean Seas, *d.* 1686. Parish Church, Somerleyton, Suffolk. Mural tablet and bust.
- SIR CLOUDESLEY SHOVEL**, Admiral, *d.* 1707. Westminster Abbey. Marble mural monument, with recumbent effigy.
- SIR GEORGE ROOKE**, Naval Commander, *d.* 1708. Canterbury Cathedral. Mural monument, with bust.
- SIR RICHARD HADDOCK**, Kt., Admiral and Commissioner of Navy, *d.* 1714. Parish Church, Leigh, Essex. Table monument.
- SIR THOMAS HARDY**, Admiral, 1792. Westminster Abbey. Marble mural monument, with effigy.
- EDWARD VERNON**, Admiral, *d.* 1757. Marble mural monument with bust.
- CHARLES WATSON**, Admiral, *d.* 1757. Marble mural monument, with three effigies. Buried at Calcutta.

CRIMPING.—Those of our readers who were interested in our articles on this subject, will find that we were not wrong in awarding to Canada the important place we did in the crimping world. The following is extracted from a colonial paper:—Murder.—Crimps at Work Again.—The Pistol in the Harbour.—A Sailor Shot Down in Cold Blood.—The facts, as elicited by our reporter, are as follows:—About half-past one o'clock yesterday morning, the runner of a Champlain Street crimp boarded the bark *N. and E. Gardner*, lying in the stream, nearly opposite the Montreal Ocean Steam Ship Company's Wharf, in company with two seamen, named respectively, James Milliken and James Clyde, who had deserted from the vessel on Sunday last, entered the fore-castle, where a hand named Sweeney was sleeping in his bunk, and asked him to get two sailors, who wished to desert. He told them that the men had gone already. They then asked him to point out where the clothing of a man named Gustaf Prufs, a Swedish sailor, then on watch, was to be found, and forced him to comply with their demand. They then crossed over to the other side of the vessel, where Prufs was on watch, and asked him to desert, which he declined to do; and when they endeavoured to force him to go with them, he resisted stoutly, and maintained his ground by clinging to the windlass. The runner, becoming exasperated, clutched the unfortunate man by the throat, while he was insisting upon

the return of his clothing, put his hand into his pocket, drew a revolver, and saying, "D — you, take that!" fired the bullet, entering the left eye, passing entirely through the head, and causing instantaneous death. While this altercation was going on, the two sailors went over the ship's side, with the bag of clothes belonging to Prufs, and got into the boat lying alongside. The runner immediately rushed up the stairs of the forecastle, and the trio made their escape in the boat. Sweeney heard the shot, and immediately sprung from his bunk, only to find Prufs lying dead, and to see the two deserting seamen getting over the ship's side. It is difficult for Her Majesty's Government to find fault with the doings at New York and Callao, when such an act as that above detailed may be committed in the face of day, and without calling for any special repressive measures in Her Most Gracious Majesty's own dominions.

THE CANADIAN PATENT LAW.—The new Canadian Patent Law will come into effect on the 1st September next. The law provides that all inventors, or their assigns, may receive patents provided a foreign patent for the invention has not been in existence for more than one year prior to the application being made for the Canadian patent. Improvements on existing patents may also be patented. The applicant shall, for the purposes of the Act, elect his domicile in some known place in Canada; this being a mere formality. The patent will be issued for five, ten, or fifteen years, at the option of the applicant; but, at the expiration of the first five or ten years, the patent may be extended for another term of five years. There is no provision for extension after the fifteenth year. In case of error or defective description the patent may be re-issued, as is the case in the United States. In case of an assignment of a patent, such assignment must be registered in the Patent Office. The law provides for remedy in case of infringement of patents, and also for the impeachment of patents before the Courts. Every patent will be subject to the condition that the patentee shall manufacture the invention in Canada within one year from the date of the patent; and the patent is to be void if, after the expiration of one year from its date, the patentee or owner causes the importation in Canada of the invention for which the patent is granted. The fees payable to the Patent Office for each patent are at the rate of \$20 for each period of five years.

THE QUEEN has been graciously pleased to approve, as Vice-Consul at Hong-Kong for His Majesty the King of Spain, Don Jose de Navarro; and for His Majesty the King of the Hellenes, Mr. Ernst Biesterfeld as Vice-Consul at Newcastle-on-Tyne.

MAURITIUS.—Michael Connal, Esq., has been appointed by Her Majesty to be a member of the Legislative Council of the Island of Mauritius.

NOTICE TO MARINERS.—No. 69.

Regulations for Passage through the Suez Canal.

The following regulations, which have been enacted to take effect from the 1st of July, 1872, will supersede those heretofore published on the 17th of August, 1869, and the 4th of February, 1870:—

Article 1.—All vessels, upon entering the Canal, will be furnished with a copy of these regulations, and the masters of vessels will be expected to comply with them in each and every respect.

Article 2.—There is a depth of water throughout the Canal of (eight meters) $26\frac{1}{2}$ feet, and the navigation of the Canal is open to vessels of any nationality whatever, not exceeding (7.5 meters) $24\frac{1}{10}$ feet draught, and upon condition of strictly complying with these regulations. Sailing vessels of more than 50 tons must be towed through. Steamers may either use their own steam power, or employ steam tugs, under conditions to be named hereafter.

Article 3.—The speed of vessels passing through the Canal, must not, under any circumstances, exceed (10 kilometers) $5\frac{3}{10}$ knots per hour.

Article 4.—Any vessel of more than 100 tons is required to take on board one of the Company's pilots, who will give information of the courses to be steered. The shipmaster will, however, be held responsible for the grounding of the vessel, or any other mishap which may result from the direction of the commander, and the manœuvring of the ship. The pilots are to assist the commander with their experience and their local knowledge, but as they cannot be conversant with the working of the ship, consequent upon the model, the structure of the engines, &c., the responsibility of running the ship through the Canal will remain with the commander.

Article 5.—When a vessel intending to pass through the Canal has anchored at Port Said or Suez, the commander is bound to register himself at the Bureau of Transit (Bureau du Transit), and to pay the transit toll, the pilotage, the towage, as also the harbour fees, if there are any. A receipt will be given, which will serve as a passport. He is also obliged to make a written statement as follows:—Name and nationality of the ship; name of commander; names of owners and shippers; port from; destination; the draught of water; number of passengers; tonnage of the ship, as shown by his official register.

Article 6.—In order to secure safety, and as far as possible to promote the quick passage of the mail steamers, the Company will direct the time of entering the Canal, and the order in which vessels will enter. No ship will, therefore, have a right to demand an immediate passage through the Canal, and any complaint of detention caused by this article will be rejected.

Article 7.—In the formation of the line for entering the Canal, the

commander will take his station according to the number given him upon his receipt, so soon as the pilot comes on board.

Article 8.—Upon entering the Canal, ships must have their yards braced sharp, their head booms rigged in, and their boats inboard. In addition to having both bowers ready for letting go, there must be a strong stream anchor ready for letting go astern (with a hawser strong enough to stop the ship's headway immediately) at the order of the pilot.

Article 9.—1. Each vessel in passing the Canal must have one boat manned and towed astern, carrying a hawser ready at any moment to make fast to the stakes on either side of the Canal.

2. Commanders must have at all times—by day as well as by night—a watch on deck, ready to haul upon or to cut the hawser as may be required.

3. In moving by night, which is exceptionally permitted, vessels must carry their prescribed lights, and have their look-outs stationed. When lying still at night they must have white lights at the bow and the stern, and also have their look-outs stationed.

4. Each steamer, tow-boats as well, must, in passing bends, approaching boats crossing their bows, or which they overtake, or upon approaching dredges, or other vessels which they may meet on their passage, whistle and stop if the channel is not clear. In going by the passing station, or in passing vessels, barges, dredges, or other floating material, they must go slow.

5. Any vessel fearing collision must not hesitate in preference to take the ground. The damages will be assessed upon the vessel which might have prevented the accident.

6. So soon as two vessels, going in opposite directions, come within sight of each other, they must slow down, and keep to the starboard shore, or stop, according to the direction of the pilot.

7. Ships bound in the same direction must not pass each other in the Canal. Should, however, such an event become necessary, it must take place at one of the passing stations, and under the direction of one of the officers of the Company.

Article 10.—Whenever it becomes necessary for a ship to stop, and she is not in one of the passing stations, which should, however, always be aimed for, her commander must make her fast, bow and stern, on the lee side of the Canal, and he must show this stoppage in day-time by signals, and at night by lights on the bow and at the stern. In case of the grounding of a ship, the officers of the Company have the right to prescribe the means of floating her, to lighten her if needed, and to have her hauled off. The ship has to bear all expenses unless it is proven that there is less water in the Canal than had been announced, or the

accident has been caused by wrong directions given by the pilot. All these expenses for floating the ship, for lighterage, reloading, &c., must be paid to the Company before the ship has left the harbour of Suez or Port Said.

Article 11.—Commanders of ships are forbidden—

1. Before entering the Canal to overload their decks with coal or other goods, so as to endanger the stability of the ships.
2. To anchor in the Canal, except in case of necessity, and never without the consent of the pilot.
3. To empty into the Canal sand, ashes, or anything else.
4. If anything should, by accident, fall overboard, the pilot shall be immediately informed, and will report it to the officer of the next station.
5. Ship-masters are forbidden to try to recover such without the permission of the officers of the Company.
6. The recovery and safe keeping of objects fallen overboard, will, in whatever manner it may be effected, be at the expense of the commander of the ship, who will receive them on payment of the expense.

Article 12.—1. From July 1, 1872, the Suez Canal Company (Compagnie Universelle du Canal Maritime de Suez) will assess a toll of 10 francs per ton, actual capacity of the ship.

2. The gross tonnage, as recorded in the ship's papers, according to the English measurement, will be the standard for this toll.

3. For vessels of other nations, the papers of which do not contain the tonnage according to the above method, it will be computed by the reduction table published with these regulations.

4. Ships which have no papers, or where papers are incomplete, will be measured by officers of the Company, according to the method employed in England for freighted ships.

5. All parts of the ship which are covered permanently or temporarily, and which are not comprised in the tonnage officially registered in their papers, will be measured by the officers of the Company. The tonnage thus ascertained will be subject to the toll.

6. National vessels, as regards toll, will be treated in the same manner as merchant vessels. The toll of 10 francs for each passenger, as well as the transit toll, is to be paid in advance before entering the Canal at Port Said or Suez. The harbour fees at Port Said, Ismaila, and outside the breakwater of Suez, have been fixed at two centimes per day per ton, after a stay of 24 hours. The anchorage for the whole time will be pointed out by the captain of the port, and these fees are payable every ten days. Errors in establishing the tonnage, or in the payment of the tolls, must be reported within a month of the passage of the ship. After

that time no complaints will be entertained. Any erroneous application of the tariff cannot be invoked as a precedent against the Company.*

Article 18.—Owners have the right to have their vessels towed by their own tow-boats, thereby assuming all responsibility. These tow-boats are subject to transit toll, and to every article of the present regulation in regard to passing ships, with the exception that they are not required to take a pilot if there is already a pilot on board of the vessel being towed.

The prices for the services of the tow-boats owned by the Company have been fixed as follows :—

For sailing vessels of 400 tons and less, 1200 francs.

For sailing vessels over 400 tons, 1200 francs for the first 400 tons, and 2 francs 15 centimes for each ton in excess.

Steamers of more than 400 tons pay 2 francs per ton, under the condition that the engines are ready to assist the tow-boats.

Steamers of less than 400 tons, and such as will not assist the tow-boats, will be charged the same as sailing vessels.

In case of a compulsory detention of a ship, or of a ship grounding in the Canal, the officers of the Company have the right to use the tow-boat for clearing the channel and preventing the detention of other vessels, at the expense of the ship, as prescribed in a preceding article.

The tariff under such circumstances is per day of twelve hours—

For a tow-boat of first class, 1200 francs.

For a tow-boat of second class, 800 francs.

Each day begun will be counted as a full day.

When the ship is afloat and is towed, the tow-boat is to be paid, besides the above expenses, according to the established tariff. If a ship wishes to be accompanied by a tow-boat, she is to be charged as follows :—

For a tow-boat of the first class, 1200 francs per day.

For a tow-boat of the second class, 800 francs per day.

In case of detention the accompanying tow-boat has to aid the ship in its passage when it is necessary. If the ship has been towed a considerable distance, as for instance, from one passing station to another the tariff for towing can be demanded instead of that for accompanying.

When a ship has been towed or accompanied by a tow-boat only half the distance for which the arrangement had been made, she will be required to pay only half the tariff for the distance contemplated in the first instance, and, in addition, for a tow-boat of the first class, 600f. ; for a tow-boat of the second-class, 400 francs. No abatement is made

* Although the Suez Canal Company has adopted the above method for ascertaining the tonnage of vessels, it does not relinquish its right to adopt in the future any other method which may prove to be more accurate.

for any other fraction than one-half. Ismaila is considered to be the half-way station between Suez and Port Said. Any vessel being towed must use its own hawsers. For the towage of monitors, loaded or unloaded lighters, and all other floating material, special agreements will be made upon mutual understanding.

Article 14.—The pilot's fees for passage through the Canal are based upon the draught of vessels, and are at the following rates for each decimeter of draught :—

For ships not exceeding 9.84 feet draught	5 francs.
For ships from 9.84 feet to 14.76 feet draught	10 francs.
For ships from 14.76 feet to 19.68 feet draught.....	15 francs.
For ships from 19.68 feet to 24.61 feet draught.....	20 francs.

A pilot is to receive for each day's detention 20 francs.

Article 15.—The disbursing officers of the Company in Paris will receive, directly or through agents selected by the owners at their own risk, any sums which they may wish to deposit in advance for the transit toll or other expenses under these regulations. On receiving such sums the administration at Paris will give a receipt, which the master of the ship uses, instead of money, in payment of tolls, &c., at the offices in Egypt.

From ships, the owners of which have deposited in advance the transit tolls at the Company's office in Paris, the officers in Egypt are authorised to accept a draft from the master, payable at sight, for the expenses of pilotage and other fees. In case the prepayments in Paris do not cover the actual expenses, the cost of telegraphing, if any is needed, will be borne by the ship. This latter regulation will also affect ships entering the Canal from the Red Sea.

By order of the Bureau of Navigation :

R. H. WYMAN, Captain U. S. N.,
Hydrographer.

U. S. Hydrographic Office,
Washington, D. C., June 15, 1872.

COSTA RICA IMPORT DUTIES.—The Board of Trade have received a copy of a despatch from Her Majesty's Consul at San Jose, reporting that by a decree of the Government of Costa Rica, dated January 5th last, all materials for the construction of the railroad, and all necessaries and comestibles, such as flour, rice, beans, corn, meat, &c., may be introduced at the port of Limon free of duty ; and that all ships entering that port during the term of construction of the railroad are free from all port dues.

UNITED STATES: CUSTOMS' TARIFF.—An Act has been passed by the United States Congress, and approved by the President, making extensive

alterations in the Customs' Tariff of that country. The Act, and a copy of the old tariff with the changes noted in the margin, can be seen at the Board of Trade.

CHILE.—William Taylor Thomson, Esq., now Her Majesty's Chargé d'Affairs and Consul-General in the Republic of Chile, has been appointed to be Her Majesty's Envoy and Minister Plenipotentiary to the Shah of Persia.

COST OF TRAINING BOYS.—IN our number for March, 1871, we sketched out a scheme for training boys for the Merchant Service. Whilst we in no way wish to check benevolence, we are desirous of seeing it exerted in a really useful and systematic manner. The main point of our scheme is that the Government should not undertake the management of training-ships, nor the appointment and pay of any of the officers, nor the training, but should merely make grants in aid for every boy trained who attains to a certain standard of proficiency and physique, and who is actually apprenticed to the Sea Service. It is not easy to arrive at the cost of the 3,500 boys now under training in the Royal Navy, but as far as we can gather by picking out the items in the votes, we think we shall not be wrong in putting down the cost of each boy per annum at about £70. In the training-ships established in our ports for the Merchant Service, the cost is much less per boy. In some it is under £20 a year, and even in the officers' ships, which are really floating colleges, the expense is less than in the training-ships for seamen of the navy. In the *Conway* the cost per head does not exceed £40 a year, and in the *Worcester* it does not exceed £45, and this with all expenses of management. We do not wish to see any of the existing training-ships crippled, but we wish to see them assisted and improved, and in this view we think the Mercantile Marine Fund ought to contribute to them. If the Mercantile Marine Fund were to grant in aid (say) one-third of the entire keep of approved boys in these training-ships, (boys, say from 15 to 18 years old, at £24 a year,) the cost to the Mercantile Marine Fund, that is to say, to the shipowner, would be £8 a year per head for approved boys under training; and if above and beyond this the State were to enter these approved boys in the Reserve, and were to give them (say) only £1 a year while they were on board the drill-ship, and second-class Reserve pay as soon as they became ordinary seamen, we think that we should soon have the foundation of a national system which would, at the cost of the Mercantile Marine Fund, assist in training boys for service in merchant ships, and at the cost of the Navy Estimates subsequently secure their services in the Reserve. The shipowner and the State would each bear their share of the cost, and would each be benefited. Many more ambitious schemes have been

proposed, but we believe that the scheme we suggested in March of last year has the merit of simplicity, efficiency, and economy. Above all, it would not profess to do more than it could do, and it has such elasticity that it could be extended to almost any extent.

SUEZ CANAL DUES.—The following certified copy of correspondence has been handed to us. It would appear that the “tonneau de capacité” at once is not, and is, the number denoting the gross tonnage. The letter of Lord Enfield shows that some deduction ought to be allowed for the propelling power. The Canal Company say they agree to that, and, thereupon, make an allowance for engine-room. Unfortunately, however, the tonnage, *after* this allowance has been made, happens to be the gross tonnage; and the British shipowner does not understand how it happens that a charge on the full gross tonnage is said to be a charge on the tonnage, minus engine-room allowance. We hold, and always have held, that gross tonnage is the proper tonnage for the Suez dues, and when, as at present, we pay on that tonnage, we would rather call it by its proper name. If a gross tonnage is 2,000, we would rather pay on 2,000, as a gross tonnage right out, than be told that we must pay on that tonnage, as representing something else. For example, $2,000 + 80$ per cent. = 2,666, which M. de Lesseps calls the gross tonnage de capacité. He then says, “We will now make an allowance for coals; we will be liberal; in fact, we will deduct one quarter of the whole capacity of the ship, and give it to you for fuel and engine.” Behold, then, $2,666 - 25$ per cent. = 2,000 “tonneau de capacité,” after allowance for fuel. This is nothing but a piece of juggling, and we fear it will be prejudicial to the Canal, because it shows that “tonneau de capacité” means, according to the Company, something that has no existence, either “in the heavens above, or in the earth beneath, or in the waters under the earth.” Besides, we must not forget that some day they may find 25 per cent. to be too great an allowance: in which case, as pointed out in our leader, we shall pay on a higher tonnage than the gross. The sooner a European Commission is agreed to, the better will it be for all parties:—

“Chamber of Commerce and Manufacture,

“(Incorporated by Royal Charter, 1783)

“Glasgow, 5th August, 1872.

“Dear Sir,—With reference to the remonstrance forwarded, to Earl Granville, respecting the proposed augmentation of dues on the Suez Canal, the following letter has been received.—I am, etc.,

“(Signed) G. STEWART.”

“Foreign Office, 31st July, 1872.

“Sir,—I am directed by Earl Granville to acknowledge the receipt of your letter of the 26th inst., on the subject of the alteration in the Suez

Canal dues, and I am to inform you, in reply, that this matter has been considered in communication with the law advisers of the Crown, and that Her Majesty's Government, as at present informed, are of opinion that the construction which the Canal Company put on the words 'tonneau de capacité des navires,' in the Act of Concession, namely, the gross tonnage of the vessel, after deduction has been made of space for the engines and coal bunkers, is a fair construction.

"This mode of calculation has been adopted by the European Commission of the Danube.—I am, Sir, your most obedient humble servant,

“(Signed) ENFIELD.”

“The President of the Glasgow Chamber of Commerce.”

(True Copy, W. D. Harvie.)

NOTICE.—The Lords of the Committee of Council on Education having decided to transfer the instruction in Physics, Chemistry, and Natural History, from the Royal School of Mines, in Jermyn Street, and the College of Chemistry, in Oxford Street, to the New Buildings, in Exhibition Road, South Kensington, Notice is hereby given that in future the following courses of lectures and practical laboratory instruction will be given at South Kensington, at the dates specified:—Chemistry, by Professor Frankland, D.C.L., F.R.S. A course of forty Lectures on Inorganic Chemistry, commencing 21st October, 1872. A course of thirty Lectures on Organic Chemistry, commencing 13th January, 1873. Laboratory instruction, consisting of an elementary and an advanced course, commencing on 1st October. Fees:—Lectures on Inorganic Chemistry, £4; Lectures on Organic Chemistry, £3, together £6; Laboratory instruction, £12 for three months; £9 for two months; and £5 for one month.—Biology, by Professor Huxley, LL.D., F.R.S. A course of eighty Lectures on Biology (or Natural History, including Palæontology), with laboratory instruction, commencing 7th October, 1872. Fee for the full course, £10; for the Lectures only, £4; for the Laboratory Instruction, £6.—Physics, by Professor Frederick Guthrie. The course will consist of Lectures, with Laboratory work on the subject of the Lectures, divided as follows:—Twelve Lectures on Molecular Physics, Sound, etc., commencing 24th February, 1873; fifteen Lectures on Heat, commencing 24th March; fifteen Lectures on Light, commencing 12th April; twenty Lectures on Electricity and Magnetism, commencing 19th May. Each course will be complete in itself, and may be taken separately. Fee, £5 per course, including Laboratory work; or £15 for all the courses; For the Lectures alone, £1 per course.—N.B.—Students entering for the Associateship of the Royal School of Mines are not obliged to attend the practical work in Physics and Biology. Besides these Students and Teachers in Training, only such a limited number of

occasional public students will be admitted as can be accommodated. Letters with respect to the foregoing courses should be addressed to the Secretary, Science and Art Department, South Kensington, London, S.W.—By order of the Lords of the Committee of Council on Education.

OPENING OF KINNGCHOW.—The Board of Trade have received an extract from a despatch from Her Majesty's Minister at Peking, reporting that arrangements have been made for opening the port of Kinngchow, in the Island of Hainan, to foreign trade.

NAVIGATION OF THE DANUBE.—According to a Bucharest letter in the *Byzantis* Greek newspaper, the question of completing the works for improving the navigation of the Danube and the Iron Gates, has been arranged between Turkey and Austria. The expenses of the works will be divided between the two Powers. Turkey will undertake the conservancy of the navigation from Orsovo to the Black Sea, and Austria from the same place to Possavo. Coasting dues will be levied by the two Powers only. Servian and Roumanian vessels will have to pay the same dues of those of foreign Powers.

CAPTAIN W. D. EVANS, to whom Her Majesty's Government made an award in money for introducing coloured side lights in ships, died at Ostend, the 3rd instant, at his residence, No. 29, Rue Christine, aged eighty-two years and six months.

RUSSIAN MERCANTILE MARINE.—From an article in the *Journal de St. Petersbourg*, upon the Russian Mercantile Navy, we learn that the value of the imports into Russian ports amounted, in 1870, to 470,626,888 roubles. Of this sum the imports through Baltic ports alone amounted to 169,937,783 roubles, and the exports by the same channel to 121,284,626 roubles, thus giving a total for the Baltic ports of 291,222,409 roubles. This trade is in great part carried on in foreign vessels, as will appear from the fact that no less than 5,462 vessels entered the Baltic ports in 1868, while the entire Russian Mercantile Marine in that year numbered only 751 ships. After commenting upon the evident inadequacy of the Russian Mercantile Marine to the resources of the country, the article concludes by requiring of the Government:—First, to establish on all the coasts sufficient maritime schools to satisfy the demand, and to give the population all the information and encouragement necessary to induce them to enter the naval service. Secondly, to encourage everywhere, and by every means, the building of vessels; and Thirdly, to organise a system of insurances, with a view to co-operate in the construction of vessels, and in all maritime enterprises, and also to give encouragement to steam navigation.

LIGHTERAGE ON THE DANUBE.—We learn that at the mouths of the Danube many abuses exist in the mode in which cargoes are insured,

rendering it, in the opinion of our correspondent, worth the while of insurance companies to send an agent out to examine into the question. It would seem, for instance, that to prevent defective vessels from being used, the Commission at Galatz cause a register to be kept of the schlippers or cargo boats which are used in lighterage. It often happens, notwithstanding this precaution, that lighters are employed of a very inferior quality, which have neither been registered nor examined by the Commission. The shippers, mostly foreigners, insure the cargoes against chances in lighterage to Sulina. The masters, however, entrust their cargoes in these inferior vessels, and if the cargoes are damaged claim compensation from the Insurance Companies, which are mostly English. Both owners of ships and insurers would do well to look into this. It is not improbable that underwriters would be justified in withstanding payment when the services of trustworthy and efficient lighters are knowingly rejected by the master, in favour of those that are unseaworthy and unregistered.

NORTH BRAZIL.—PORT OF CEARA.—A new lighthouse on Point Macoripe (Port of Ceara), North Brazil, is in course of erection. The present light is not to be depended on; sailing ships making for the port at night, should, in order to counteract the strong current, keep well to windward until sure of their position.

SAFETY VALVE COMPETITION.—Sums collected by W. H. Bissett, Esq., of Liverpool:—

	£	s.	d.
Cunard Company	10	0	0
White Star Line	10	0	0
Pacific S. S. Co. (Mr. Just)	10	0	0
Allan Line	10	0	0
National Company	10	0	0
S. B. Guion, Esq.	10	0	0
Canada Works (Thomas Brassey and Co., Birkenhead)	5	0	0
Total	£65	0	0

FROM OUR CORRESPONDENT AT YOKOHAMA.—H.M.S. *Rinaldo*, Commander Robinson, arrived at Yokohama from Amoy on the 18th March, and remains as senior naval officer's ship. H.M.S. *Curlew*, Commander Boyle, left Yokohama for Tientsin on the 18th March. Rear-Admiral Jenkins, U.S. Navy, hoisted his flag on board the U.S.S. *Colorado* on the 15th March at Yokohama. Rear-Admiral Rogers, U.S. navy, proceeds to America by the next outgoing Pacific mail steamer. The *Colorado* goes to Hakodate shortly, and proceeds to Tientsin later on in the summer. The U.S. corvette *Benicia* is in port here. Also the

French sloop *Cosmao*. The Japanese Government has abandoned the idea of sending three Japanese men-of-war to Europe to meet the Embassy. Applications by foreigners for situations as navigating officers and engineers on board these ships have been numerous, but have in all cases met with refusal.

NITRE COKE.—A short time since some men died at one of the N.W. ports after unloading a cargo of so-called "nitre coke," carried in bulk. We have procured a sample from that cargo, and have sent it to an analytical chemist, who reports that the substance is "acid sulphate of soda impregnated with nitrous fumes," and that "there is no doubt that these fumes overcame and suffocated the men." We are not aware of any law prohibiting the carriage of such a cargo, and we think the law has gone quite far enough in interfering with cargoes. So far as we are able to judge, it is quite legal for shipmasters and Dock Companies to permit men to unload nitre coke, and it is also legal for the men to get smothered during the operation.

LEDGER'S FLUID.—We have had this fluid analysed, experimented with, and reported on. We are advised that carbolic acid stands at the head of all antiseptics. There are, however, weak stomachs who object to the delightful odour of carbolic acid, and there are nervous and mistaken people who object to it because they cannot drink it with safety. We never can understand why people want to drink disinfectants they may happen to have in the house; but as some persons are to be found who do convert a disinfectant into a beverage, they will do wisely to avoid carbolic acid, and use something less powerful. "Ledger's" fluid is perfectly harmless, and our chemist reports that, regarded as an inodorous deodoriser, it holds a high rank.

YENIKALEE BAR.—In our number for July we published a caution to British shipowners as to the enormous extent to which they are sometimes plundered by unscrupulous masters in collusion with a certain class at Kertch, amongst whom are many swindlers. These men not only "lighten" ships over Yenikalee Bar, but lighten the pockets of owners as well, and demoralise the masters. We would strongly urge our readers to do what they can in support of Mr. Consul Barrow in his endeavours to protect the British owner against plunder at Kertch.

BARRATRY IN GREEK WATERS.—We are informed that the measures taken by the Hellenic Government for the repression of Barratry, several cases of which recently occurred in Greek waters, have proved most satisfactory in their results. Vessels of the Royal Hellenic Navy were despatched in various directions in search of some of the known criminals, and it appears that the guilty parties have been discovered and seized both in Greece and on the coasts of Asia Minor, and were to be prosecuted before the Court of Assize.

ITALIAN MAIL STEAMERS.—In pursuance of the contract referred to in our June number between the Italian Government and the Peninsular and Oriental Company to run a steamship weekly between Venice, Ancona, Brindisi, Alexandria, and India, the first steamer of that line, the *Ceylon*, arrived at Venice from Southampton on the morning of the 22nd July. The vessel's arrival was hailed with much enthusiasm, and numerous gondolas set out to meet her, conveying among others the Syndic and the President of the Chamber of Commerce, who went on board to welcome the captain. On Wednesday, the 24th, Captain Black (the representative of the Company), Captain Evans, and the officers of the ship, were entertained by the Chamber of Commerce at a banquet, at which the Prefect, the principal military and naval authorities, the British Consul, etc., were present. On the following day Captain Black gave a dinner on board the *Ceylon*, at which the toasts of the King of Italy and the Queen of England were received with loud applause, and the best wishes expressed for the prosperity of Venice.

CONTAGIOUS DISEASES (ANIMALS) ACT, 1869.—By an Order which issued in pursuance of this Act at the Council Chamber, Whitehall, on the 11th July, it is provided *inter alia* that from and after the 31st day of July, 1872 (5.) *If an animal (including a horse) on board a vessel in Great Britain, or within three miles of the shore thereof, dies of or is slaughtered in consequence of being affected with a contagious or infectious disease, the master or any person having the charge or command of the vessel shall, with all practicable speed, cause the carcass thereof to be disinfected on board the vessel in such mode as the Privy Council from time to time direct or approve. If he fails to do so, he shall be deemed guilty of an offence against this Order, i.e., be liable to a penalty not exceeding £20. (6.) If any person throws or places, or causes, or suffers to be thrown or placed, into or in any river, stream, canal, or other water in Great Britain, or into or in the sea within three miles of the shore of Great Britain, the carcass of an animal (including a horse) which has died of or been slaughtered in consequence of being affected with a contagious or infectious disease, he shall be deemed guilty of an offence against this Order, unless he shows to the satisfaction of the Justices before whom he is charged that he did not know that the same had so died or been slaughtered, and that he could not with reasonable diligence have obtained that knowledge.*

CONSULAR APPOINTMENTS.—The Queen has been graciously pleased to appoint John Auldjo, Esq., to be Her Majesty's Consul at Geneva, and to approve of Mr. Gustave Beckx, as Consul-General at Melbourne, with jurisdiction over Australia and the adjacent Islands, for His Majesty the King of the Belgians; and for His Majesty the King of Spain, Don Manuel Menendez, as Consul in the Island of New Providence, to reside at Nassau.

REWARDS.

To a Chinaman, a binocular glass, for kind services to the crew of the steamer *Don*, of Liverpool, in February, 1871.

To a Chinaman, named Wu Chieh Hsing, a binocular glass, for humane and kind services to the survivors of the crew of the barque *Yang-tsze*, of London, in October, 1871.

To Capt. C. F. Christiansen, of the North German barque *Perle*, of Hamburg, a binocular glass, for his kindness to the crew of the ship *Dhollerah*, of London, whom he rescued at sea on 30th May, 1872.

MARITIME LAW.

LOSS OF LUGGAGE.—THE “NORMANDY.”—LONDON AND SOUTH WESTERN RAILWAY COMPANY v. JAMES AND OTHERS.—This was an action by the railway company to restrain the defendants from prosecuting several actions (in some of which judgment had been signed) against the defendants, for compensation for loss of life, under Lord Campbell's Act, and for loss of merchandise and personal luggage. The Company had paid £1,500 into the Court of Admiralty, being £15 per registered ton, the amount to which they believed their liability to be limited by the Merchant Shipping Act, and they moved that the defendants should be restricted from prosecuting these actions until the result of their liability shall have been ascertained. The Master of the Rolls, in giving judgment, said that, as in the action brought by the defendant James, for breach of contract to carry him and his luggage from Waterloo to Guernsey, the Company appeared to fill two distinct characters, that of a railway company, and that of a shipowner, and had contracted with Mr. James in the first capacity, without stipulating respecting loss by perils of the sea, he would be at liberty to proceed with his action; but that, as it had been decided that a shipowner's liability for loss of luggage, under Lord Campbell's Act, as well as for loss of merchandise and property, was subject to the limitation in the Merchant Shipping Act, he should stay execution in the other actions, and leave the amount of the Company's liability to be ascertained and distributed at law, as the preferable mode of dealing with the claims.—Rolls Court, July 15.

SHIPPING AND MERCANTILE GAZETTE CORRESPONDENCE.

(Reprinted by special arrangement with Sir WILLIAM MITCHELL.)

COLLISION AT MOORINGS.—A loaded vessel was moored alongside the quay for discharging, by order of the dockmaster, and under charge of the dock pilot, in Leith Dock, and, on the following day, a larger light vessel was moored alongside her, despite the protest of her master.

Subsequently it came on a heavy gale, right on the broadside of the light ship, and there being no hands on board to gets warps away to heave her off, she did considerable damage to the loaded vessel by rolling down upon her. A survey was held and application was made to the owners of the light vessel for the amount of damage sustained; but they repudiated the claim, and referred the applicants to the Dock Company. What are the proper steps to take in such a case? Who are the proper parties to sue, or is there no remedy? The light ship sustained no damage of moment.—A vessel that drifts against another from negligence is held blameable, and her owner has to pay for all damages incurred. The inner vessel is supposed to protect herself, to a certain extent, by fenders. In the cause of "*Seccombe v. Wood*," in the Court of Exchequer (and in several other cases), it was held that if a Master, by negligence, makes a ship unmanageable, he is liable as for direct damage. If, therefore, the master of the light vessel could have avoided the casualty by ordinary precautions, the owner may be sued.

DERELICT SHIP.—On the 9th inst., about three or four leagues off the coast of Portugal, a passing vessel (British), homeward bound from Mediterranean, fell in with a vessel, North German flag, dismasted and a derelict, loaded with a cargo of oil in casks, from Gallipoli, bound to St. Petersburg. The said vessel, having been previously in collision with some vessel unknown, was dismasted and otherwise disabled. The captain, with his own vessel and assistance of his own crew, towed the said vessel into the Port of Sines, in Portugal, and left her in safety, moored afloat, and making little or no water. The captain left the said vessel, cargo, and the ships' papers in charge of the British Consul, with a power of attorney to act for him and for the benefit of all concerned, and sailed again direct. What claim or demand have the port authorities on the ship or cargo any more than the legal duty of the said cargo, landing, or reshipping, or sold, as the case may be?—The port authorities can claim all port charges, landing and shipping dues; and the Custom-house officials could levy a duty on the cargo, as also on the ship, if sold, under the Portuguese revenue laws. The Government could also levy a droit of Admiralty.

INSURANCE.—An insurance broker, who has been in the habit of underwriting for four or five parties per pro., becomes bankrupt. On investigation, it is found that for two, at least, of those parties he had no authority whatever to underwrite. In order, however, to cover himself partially on the risks taken in these two names, he re-insures a portion of the amounts, and his accountants now claim these re-insurance policies as creditors' property, and say they (in case of loss or accident to ships goods so re-insured) would claim from underwriters, and credit the bankrupt's estate with amounts so obtained. Are not these re-insurance

policies, actually and legally speaking, the property of the owners of ships and goods on which they are effected? If so, what means should be adopted to obtain possession of them? And, secondly, is not the insurance broker liable to a criminal prosecution by the assured for having underwritten without authority, and so obtained money for premiums under false pretences?—If an insurance agent receives premiums for underwriting, on account of underwriters who have not authorised him to act for them, and then, to cover his liabilities, insures—not re-assures—a portion of the amount for which premiums were taken in a *bonâ fide* manner for the benefit of, or in behalf of, the persons employing him to insure, the policies, in the event of the bankruptcy of the agent, should become the property of the insured. An agent who takes money on account of underwriting, and does not insure, is open to a criminal prosecution. An application on the subject should be made to the Court of Bankruptcy.

MORTGAGED SHIP.—A vessel was chartered out to Cronstadt. A few days afterwards she was chartered home to proceed from Cronstadt to Wyburg, to load a cargo of deals to a good and safe port on the East Coast of England. After the ship lay in the harbour light for about five weeks, the mortgagee seized her on the day she was loaded. Has the mortgagee any right to recharter the ship home, and, if he does so, upon whom will fall the responsibility for non-fulfilment of the original charter. The owner of the ship is quite willing to fulfil the original charter, but the mortgagee insists on rechartering the ship.—The mortgagor of a ship remaining in possession has full power to enter into contracts with respect to the ship, and the mortgagee cannot interfere with those contracts, so long as they do not prejudice or injure his security; but if the mortgagee goes into possession under his mortgage he can claim the benefit of all charters into which the owner has entered, he (the mortgagee) giving notice to the charterer to pay freight to him.

PORT OF GLOUCESTER.—A vessel is chartered homeward to “a safe port in the Bristol Channel.” Does this include Gloucester?—Gloucester, for purposes of charter, is not held to be a port in the Bristol Channel.

BOARD OF TRADE INQUIRIES AT HOME.

40. *Earl of Arran* (s.s.), of Penzance, stranded near Irishman's Ledge, Scilly Islands, 16th May. Inquiry held at Penzance on the 3rd August, before F. Bouse and J. Batten, Esqs., J.P., with W. Howorth, R.N., Inspecting Commander of Coastguard, Penzance, as N.A. Master in default for steering an unusual course. Certificate suspended for four months.

INQUIRIES ABROAD.

59. *Mariam*, of Chittagong, in collision off Dondra Head, 12th March. Inquiry held at Galle, before H. W. Gillman, Esq., Acting District Judge, and D. Blyth, Esq., master attendant. Collision occurred through default of *Mariam*. Master held no certificate.

60. *Scanderia*, of London, in collision at Budge-Budge, River Hoogly, 26th May. Inquiry held at Calcutta. Pilot attempted to pass another vessel. Pilot punished.

61. *Killarney*, of Dublin, in collision at Budge-Budge, River Hooghly, 26th May. Inquiry held at Calcutta. Casualty the result of an attempt made by the pilot to cross another vessel. Pilot punished.

62. *Douglas*, of Aberdeen, stranded at Dioyer Rocks, 29th April. Inquiry held at Hong Kong, before C. May, Esq., magistrate, H. G. Thomsett, R.N., harbour master, G. F. Macban, Esq., J.P., W. M. Gibson, and W. B. Andrews, master mariners. Master in default. Casualty occurred through not making allowance to counteract the effect of current. Certificate suspended for nine months.

63. *Black Diamond*, of Sydney, stranded on the Walrus Rock, Spencer's Gulf, 25th May. Inquiry held at Adelaide before R. H. Ferguson, Esq., stipendiary magistrate, and J. W. Smith, Esq., N.A. Master in default in not ascertaining the vessel's position, whilst the compass was not to be depended on. Certificate suspended for six months.

64. *Lubra*, of Adelaide, stranded 1st May. Inquiry held at Adelaide before R. H. Ferguson, Esq., stipendiary magistrate, and J. W. Smith, Esq., as N.A. Casualty was occasioned by an extraordinary flood tide, which the master had no means of determining.

65. *Clara Sayers*, of Sydney, stranded at Rodrigues, 21st January. Inquiry held at Mauritius before D. Wales, Esq., harbour master, A. W. Barclay, J. Cowin, and J. P. Ellis, marine surveyors. Casualty was occasioned by approaching too near the land in thick weather. Court severely censured master, who held no certificate.

66. *Secret*, damaged at sea in lat. 92° 40' S., long. 29° 30' E., on the 12th May. Inquiry held at Port Elizabeth, before C. D'Arcy, Esq., resident magistrate, and F. Skead, Esq., assessor. Master exonerated. Casualty, the result of boisterous weather and heavy sea.

67. *Jane Davie*, stranded near Gonega River, 26th May. Inquiry held at Port Elizabeth before A. C. Wylde, Esq., collector of customs and resident magistrate, and F. Skead, Esq., assessor. Master exonerated. Casualty owing to the violence of the wind and waves.

68. *Ornate*, of London, lost masts, bowsprit, and sails off Cape St. Francis, 10th June. Inquiry held at Port Elizabeth before A. C. Wylde,

Esq., resident magistrate, and F. Skead, Esq., assessor. Master exonerated. Casualty occurred through the violence of the sea.

69. *Quanza*, of Hull, stranded at East London, 26th May. Inquiry held at East London before A. R. Orpen, Esq., resident magistrate, and G. Walker, Esq., harbour master. Mate's certificate suspended for twelve months. Master censured for being on shore.

70. *Queen of the May*, of Workington, stranded at East London, 26th May. Inquiry held at East London before A. R. Orpen, Esq., resident magistrate, and G. Walker, Esq., harbour master. Master exonerated. Casualty occurred through stress of weather.

71. *Elaine*, of South Shields, stranded at East London, 26th May. Inquiry held at East London before A. R. Orpen, Esq., resident magistrate, and C. Walker, Esq., harbour master. No blame attached to master. Casualty occurred through stress of weather.

72. *Martha*, of Dublin, stranded at East London, 26th May. Inquiry held at East London before A. R. Orpen, Esq., resident magistrate, and G. Walker, Esq., assessor. Master exonerated. Casualty occurred through stress of weather.

73. *Refuge*, of Exeter, stranded at East London, 26th May. Inquiry held at East London before A. R. Orpen, Esq., resident magistrate, and G. Walker, Esq., harbour master. No blame attached to master. Casualty occurred through stress of weather.

74. *Emma*, of Cape Town, stranded at East London, 26th May. Inquiry held at East London before A. R. Orpen, Esq., resident magistrate, and G. Walker, Esq., harbour master. No blame attached to master. Casualty occurred through stress of weather.

75. *Glamorganshire*, lost boats and bulwarks off Mossell Bay, 10th May. Inquiry held at Port Elizabeth before A. C. Wylde, Esq., resident magistrate, and F. Skead, Esq., nautical assessor. Master exonerated. Casualty occurred through stress of weather.

76. *Baidar* (s.s.), of Hull, stranded off the Island of Gotland, 27th June. Inquiry held at Oscarshamn, before G. R. Perry, Esq., consul, J. E. Samson and R. Gardner, Esqrs., with Captain F. Werner as N.A., and G. F. ApGeorge, clerk and translator. Mate in default. Casualty occurred through error of judgment. Certificate suspended for twelve months.

77. *Sharp*, of Belfast, stranded at East London, 26th May. Inquiry held at East London before A. R. Orpen, Esq., resident magistrate, and G. Walker, Esq., harbour master. No blame attached to master. Casualty occurred through stress of weather.

78. *Young Australia*, stranded at Morton Island, 31st May. Inquiry held by the Queenstown Marine Board, Brisbane. Casualty occurred through an error of judgment. Certificate returned with a caution.

79. *Bengal*, abandoned 200 miles from Cape Hawke, 6th May. Inquiry held at the New South Wales' Marine Board. Master exonerated, being justified in the abandonment.

CHARTS, ETC., PUBLISHED BY THE HYDROGRAPHIC OFFICE, ADMIRALTY,
in August, 1872.

No.	Scale.		s.	d.
583	m = 1·45	British Guiana, Georgetown, and mouths of the Demerara and Essiquibo rivers	2	6
202	m = 1·75	Adriatic, Port Pola, and Brioni islands, with plan of Port Veruda	1	6
753	m = 0·2	Persian Gulf entrance	2	6
190	m = { 2·9 } { 3·95 }	Mediterranean, Girgenti, and Catania ports	1	6
2857	m = 0·9	United States, Potomac river... ..	2	6
187	m = 0·4	Mediterranean, Sicily, Palma to Catania	2	6
271	m = 1·45	Newfoundland, Cape Onion to Hare bay, with plans	2	6
1886	m = 1·0	South Pacific, Rapa Nui or Easter island	0	6
1749	m = 3·5	Rio de la Plata, Monte Video to Buenos Ayres	2	6
1688	m = 3·0	Madeira islands, Porto Santo bay	1	6
210	m = 3·0	Japan, East Coast, Yamada Harbour	1	6

PRIZE FOR SHIP LIGHTS.—The trials of lights at Shoeburyness are now ended. The lights that have come out best at the trials are the mast-head light of Mr. Silber, of Wood Street, Cheapside, and the coloured side lights of Mr. Harvie, of Glasgow. The lanthorns have now to be subjected to trials to ascertain how long they will burn without trimming, the condition of the lanthorns after eighteen hours burning at full power, and the capability of the lanthorns to keep out water thrown on them by buckets. After this a committee of naval officers will decide to whom the awards shall be given. The Committee who have kindly consented to act are Admiral Ryder, Captain Robertson, R.N., Surveyor General of Steamships, Captain J. A. Heathcote, Indian Navy, Captain C. P. Wilson, Indian Navy, and Captain Pryce, R.N.R.; Admiral Ryder, Chairman.

TONNAGE.—**BENGAL AND BRITISH BURMAH.**—We learn that the Government of India have issued instructions for the adoption in Bengal and British Burmah of the regulations issued by the Board of Trade, for assessing the tonnage of foreign vessels for the payment of tonnage dues.

MONTHLY ABSTRACT OF NAUTICAL NOTICES.

No.	PLACE.	SUBJECT.
147	UNITED STATES—Carolina—Charleston—Sullivan's Island	Establishment of Leading Lights.
148	UNITED STATES—Charleston—Weehawken Light	Discontinuance of Light.
149	UNITED STATES—Virginia—Elizabeth River—Lambert Point	Establishment of a Light.
150	UNITED STATES—Florida—St. John River—Dames Point	Establishment of a Light.
151	UNITED STATES—Lake Superior—White Fish Point	Establishment of Fog Signal.
152	UNITED STATES—Chesapeake Bay—Love Point	Establishment of a Light off.
153	UNITED STATES—North Carolina—Bodies Island	Establishment of a Light.
154	UNITED STATES—Georgia—St. Simon Island	Re-establishment of Light.
155	URUGUAY—River Plate—Cape Santa Maria	Destruction of Lighthouse.
156	ENGLAND—East Coast—Yarmouth and Lowestoft	Alteration in Buoyage.
157	CHINA—East Coast—Breaker Point	Danger off.
158	MEDITERRANEAN—Egypt—Rosetta, Mouth of Nile	Alteration in Light.
159	MEDITERRANEAN—Egypt—Arab's Gulf—Almalda	Proposed Establishment of a Light.
160	SCOTLAND—West Coast—Mull of Cantyre Light	Discontinuance of temporary Light.

NAUTICAL NOTICES.

147.—UNITED STATES.—*Charleston Harbour.—Sullivan's Island.*—The following beacon lights have been established on Sullivan's island, as a guide through the Main Ship Channel:—1. A *fixed red* light 34 feet above the sea, on the north-east bastion of Fort Moultrie. 2. A *fixed red* light 57 feet above the sea, in a tower on the margin of "The Cove," northward of Fort Moultrie, and 300 yards from the outer beacon.

Note.—Vessels coming into the harbour should keep the lights on Morris island in a line until those on Sullivan island are in line, and with the last marks on proceed through the Main Ship Channel until Fort Sumter beacon bears west, when a N.W. $\frac{1}{2}$ W. course will lead into Rebellion road.

148.—UNITED STATES.—*Charleston Harbour.—Weehawken Light.*—The light exhibited from the Weehawken light-vessel in the Main Ship Channel has been discontinued, and the light-vessel removed.

149.—UNITED STATES.—*Elizabeth River.—Lambert Point.*—A *fixed red* light of the fifth order is exhibited from a screw-pile lighthouse

the point of the shoal off Lambert Point, on the east side of the Channel. It stands in 6 feet water, 600 yards from the shore, and S.S.E. $1\frac{1}{4}$ miles from the lighthouse off Craney island and 2 miles from Norfolk. Lighthouse white.

150.—UNITED STATES.—*St. John River.*—*Dames Point.*—A *fixed white* light of the fifth order is exhibited from a screw-pile lighthouse off the point and 86 feet above high water. The lighthouse stands on a shoal in 6 feet at low water, about 500 yards in a south-westerly direction from Dames point. The lighthouse is painted white and the piles red.

Note.—There is a channel on either side of the lighthouse, one passes close to Dames point and the other near the lighthouse on its south-west side. The light can be seen as soon as it is opened of Reddies point above, or Mill Cove point below.

151.—UNITED STATES.—*Lake Superior*—*White Fish Point.*—A steam fog whistle has been established at the lighthouse, which, in thick or foggy weather, will sound a blast of *eight seconds*, followed by an interval of *ten seconds*, then a blast of *two seconds*, followed by an interval of *forty seconds*, alternating in this manner *every minute*.

152.—UNITED STATES.—*Chesapeake Bay.*—*Love Point.*—A light of the fourth order is now exhibited from a screw-pile lighthouse, one and a quarter miles north-easterly from Love Point. The light is a *red flashing* light, flashing *every twenty seconds* with eclipses between, elevated 87 feet above the sea, and should be seen from a distance of 10 miles. In thick or foggy weather, a bell will be sounded *every five seconds*.

Note.—Vessels drawing more than 9 feet should not pass between the lighthouse and the point.

153.—UNITED STATES.—*North Carolina.*—*Bodies Island.*—About the 1st October a *fixed white* light of the first order will be exhibited on this island $1\frac{1}{2}$ miles north of Oregon inlet, elevated 156 feet above the sea, and visible 18 miles. The tower will be painted in black and white bands. Position, lat. $35^{\circ} 49\frac{1}{2}'$ N., long. $75^{\circ} 33\frac{1}{2}'$ W.

154.—UNITED STATES.—*Georgia.*—*St. Simon Island.*—From about the 1st September, 1872, the light on the south end of St. Simon's island will be re-established, with the following alteration:—The light will be a *fixed white* light, varied by *flashes alternately red and white*, with an interval of *one minute* between the flashes.

155.—URUGUAY.—*River Plate.*—*Cape Santa Maria.*—In consequence of the lighthouse building having fallen, the exhibition of this light (of which notice, No. 68, was given), will be delayed.

156.—ENGLAND.—*East Coast.*—*Yarmouth and Lowestoft.*—In consequence of the shifting of the sands, the following alterations have been made in the buoyage.

North Scroby Buoy has been moved half a cable, and now lies in 5 fathoms with the cockle light vessel bearing west $1\frac{1}{2}$ cables.

St. Nicholas Light-vessel has been moved 1 cable N.N.W. into 11 fathoms.

North Corton Buoy has been moved 1 cable N. by W. into 5 fathoms.

N.E. Corton Buoy has been moved 3 cables N. by E. into $5\frac{1}{2}$ fathoms.

S.E. Corton Buoy has been moved 4 cables N. by E. $\frac{1}{2}$ E. into 6 fathoms.

N.W. Corton Buoy.—The West Corton buoy has been moved 6 cables N.E. $\frac{1}{2}$ N., and will in future be called the N.W. Corton; it lies in 6 fathoms.

S.W. Corton Buoy.—A *can buoy chequered black and white* has been placed three-quarters of a mile N. by E. of the former position of the S.W. Corton buoy, and lies in 6 fathoms.

Holm End Buoy.—A new *can buoy chequered black and white* has been placed in 6 fathoms, a remarkable gap in a wood, in line with Corton lifeboat house N.W. by W.; Kirkley Church, just open of St. John's Church, S.W. by W. (southerly); North Holm buoy, N.N.W. $\frac{1}{4}$ W. $\frac{1}{10}$ of a mile; N.W. Holm buoy S. $\frac{1}{2}$ W. $\frac{1}{10}$ of a mile.

N.W. Holm Buoy has been moved 7 cables S. $\frac{1}{2}$ W. into $4\frac{3}{4}$ fathoms.

Inner Shoal Buoy has been moved 1 cable to the eastward into $3\frac{1}{4}$ fathoms.

West Holm Buoy has been moved $2\frac{1}{4}$ cables S.S.W. into 6 fathoms.

S.W. Holm Buoy has been moved 8 cables S.W. $\frac{1}{2}$ S. into 8 fathoms.

Holm Hook Buoy has been moved 2 cables S.W. by S. into $4\frac{1}{2}$ fathoms.

South Holm Buoy has been moved 1 cable S.S.W. into 16 feet.

157.—CHINA.—*East Coast*.—*Breaker Point*.—The steamship *Ulysses* struck on a wreck, or rock, off this point, carrying away her rudder. Bearings place the position of the danger in lat. $22^{\circ} 52' 20''$ N., long. $116^{\circ} 27' 50''$ E.

158.—MEDITERRANEAN.—*Egypt*.—*Rosetta Light*.—This light is now a revolving light, showing red and white alternately every five seconds.

159.—MEDITERRANEAN.—*Egypt*.—*Arab's Gulf*.—*Almuida*.—About the end of the year a first-class light will be exhibited in lat. $30^{\circ} 51'$ N., long. $29^{\circ} 11'$ E.

160.—SCOTLAND.—*West Coast*.—*Mull of Cantyre Light*.—The changes in the illuminating apparatus having been completed, it is now exhibited, and the temporary one discontinued. The light is a *flared white* light as formerly.

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.

PROMOTIONS.—**St. C.**—Charles J. Pokingborne, 1864. **St. Cr.**—James Robertson (c.), 1861. **St. Sn.**—William J. Hamilton, 1868.

APPOINTMENTS.—**Ad.**—George G. Randolph, C.B., 1872, to the Reserve Squadron; Edward A. Inglefield, C.B., F.R.S., 1869, to be second in command in the Mediterranean. **C.**—John C. Soady, 1863, to *Invincible*; Charles J. Rowley, 1866, to *Pallas*; Philip H. Colomb, 1870, to *Achilles*, for temporary service; William N. W. Hewitt, V.C., 1862, to *Duke of Wellington*, additional for *Devastation*. **Cr.**—Horace W. Rochfort, 1872, to Royal Naval College; Robert H. Boyle, 1868, to *Lord Clyde*; Charles J. Vidal, 1869, to *Britannia*; Henry Salmond, 1870, to Royal Naval College; F. S. Vander Meullen, 1871, to *Repulse*; John B. Creagh, 1866, to *Flora*, for service at Ascension; Hilary G. Andoe, 1872, to *Invincible*; Charles L. Oxley, 1872, to *Revenge*. **L.**—William H. Pigott, 1872, to *Repulse*; Henry T. Clanchy, 1861, to *Jackal*, in command; W. E. Fitzgerald, 1861, to *Boxer*, in command; Robert W. Davies, 1864, to *Endymion*; Arthur C. B. Bromley, 1869, to *Pembroke*, for *Challenger*; Arthur Blennerhasset, 1871, to *Ariadne*; Frederic W. Bayley-Jones, 1864, Arthur P. Williams, 1868, and Tynte F. Hammill, 1871, to *Invincible*; John W. Ramsay, 1867, to *Achilles*, as Flag Lieutenant to Rear Admiral Randolph; Henry L. Alleyne, 1867, to *Invincible*; William F. Murray, 1866, to *Pallas*, additional; Dillon T. J. Macnamara, 1864, to *Black Prince*, for temporary service; Sebastian Gassiot, 1863, to *Favourite*; Robert H. Archer (c.), 1872, to *Agincourt*; Albert T. C. Warrington, 1864, to *Asia*. **N. L.**—George J. Hirtzel, 1865, to *Pylades*; William Tregidge, 1867, to *Egmont*. **S. L.**—John G. M. M. Field, to *Thalia*; Douglas E. B. Henderson, William T. Bourke, and William M. West, to *Invincible*; Frederic Maitland, to *Helicon*; Aston E. M'Murdo, Henry W. Savile, and Richard W. Watt, to *Invincible*; Scott J. B. Willcox, to *Duke of Wellington*. **M.**—George E. Coke, and Henry Ponsonby, to *Agincourt*; Wilhelm J. A. Bannister, Pascoe G. Froude and Scott W. A. H. Gray, to *Invincible*; Thomas H. Fisher, Herries S. Douglas, Robert S. Lowery (supernumerary), and George P. B. Fellows (supernumerary), to *Invincible*; Horace Armytage, to *Lord Warden*; George Le C. Egerton, James de V. Allen, Paul W. Bush, George H. Hewett, Edward W. Underwood, Eyre W. Shaw, James Startin, George G. Durbin, Frederic T. Hamilton, James Johnston, and William J. V. Hudson, to *Invincible*; Alexander W. Ainslie and Algernon H. Oliver, to *Lord Warden* (as supernumeraries); Hon. Walter

G. Stopford, to *Lord Warden*. **N. C.**—Thomas B. Hammond, and Herbert Lyon, to *Sultan*; Cortland H. Simpson, Arthur G. Gunner, and the Hon. Hugh Tyrwhitt, to *Hercules*; Philip C. R. W. Murray, Lewis F. Blackburn, and Theophilus Bernand, to *Bellerophon*. **C. E.**—James H. Ferguson, 1871, *Pembroke*, for *Challenger*. **N. In.**—William W. Lane, 1866, to *Repulse*; Richard H. Rowband, 1866, to *Britannia*. **St. Sn.**—Timotheus J. Haran, 1871, to *Invincible*. **A. Sn.**—William B. Fletcher, 1863, to *Orwell*; Fleetwood Buckle, M.D., 1865, and William H. Elmes, 1871, to *Invincible*; John Shields, 1863, to *Helicon*; James D. A. Harvey, 1869, to *Indus*. The following have been appointed to Her Majesty's Fleet:—Lewis Edwardes, John C. B. Maclean, M.A., M.B., William J. Volutti, John W. Davis, M.D., Robert A. Bernal, M.D., John Steil, M.B., Henry T. Cox, Cecil Drake, John Wood, William H. Patterson, Alfred T. Corrie, James G. Wall, John Mackie, Henry Scanlan, M.B., David J. Freeman, Herbert M. Nash, and John Stone; W. J. Volutti, 1872, to *Pembroke*, for Melville Hospital. **P.**—John Lyon, 1857, to *Achilles*, as Secretary to Rear Admiral Randolph; Henry W. Harlidge, 1855, to *Invincible*. **A. P.**—John Carlisle, 1865, to *Excellent*; Caleb F. A. Broadway, 1867, to *Achilles*, as Secretary's clerk; Clarence Aylen, 1861, to *Helicon*.

RETIREMENTS.—**C.**—William A. R. Pearse, 1862; Arthur H. J. Johnstone, 1865; William R. Hobson, 1866. **Cr.**—Thomas D. Williams, 1863. **Cn.**—Rev. Thomas J. Main, 1842. **P.**—James S. Daniel, 1863.

DEATHS.—**A.**—Sir Edward Collier, K.C.B., 1862 *r.* **C.**—Thomas M. Rodney, 1864, *r.* **Cr.**—William Dent Dent, 1864, *r.*; John Murray, 1861, *r.*; John G. P. Moore, 1864, *r.*; Paul G. Panton, 1865, *r.* **L.**—Frederick T. W. Passy, 1870; Hon. Evan L. V. Mostyn, 1861. **S. L.**—Robert McArthur, and Robert M. A. Sparrow. **E.**—Henry R. Wills, 1866. **P.**—Edward T. Hooper, 1813, *r.* **A. P.**—Hugh B. Edwards, 1865; Arthur W. Pearson, 1869.

AUTHORISED CHANGES OF NAMES OF SHIPS.—*Rakaia* (s.s.), of London, changed to *Ebro*, of London; *Kaikoura* (s.s.), of London, changed to *Tiber*, of London; *Ruahine* (s.s.), of London, changed to *Liffey*, of London; *Berhampore*, of Liverpool, changed to *Lake St. Clair*, of Liverpool; *Mary Warren*, of Liverpool, changed to *San Rafael*, of Liverpool.

SHIPS AND SAILS.

1.—LUGGERS.

In this number we commence a series of sketches intended to illustrate the rig and build of different kinds of vessels, which, we have no doubt, will prove of interest to our readers. Our first example (see Frontispiece) is a "three-masted lugger."

The finest of our luggers are to be found on the east coast, employed in North Sea fishing. The one shown in the plate is a large Yarmouth lugger, and the framework in her stern is used for spreading the nets. These vessels beat to windward very well, and having no top hamper, and little rigging of any kind, are very good sea-boats. Their chief drawback is the necessity for dipping the sails when going about; hence they require a largish crew for their size. As, however, in the Yarmouth vessels, a good many hands are needed to haul the nets, this is not felt as a serious disadvantage. They set a maintopsail when wanted. The maintopsail in the lugger represented has been hoisted when on the other tack, and is now to windward of the mast, which is immaterial—in fact, the mainsail itself is often allowed to go against the mast, the foresail only being changed over.

The lugger-rig is not so common among us as with the French, who have a great many coasting and trading vessels of large size rigged in this way. The French luggers, however, differ somewhat from this one. They rise very much fore and aft, and carry a large spread of canvass. They are generally shorter than ours, and their masts are more crowded.

BOOKS RECEIVED.

We have received from Mr. William Henry Archer, the Registrar-General of Victoria, the second volume of the authoritative issue of "Abstracts of Specifications of Patents applied for from 1854 to 1866." This forms the first of two volumes relating entirely to metals, which it was thought expedient to issue in advance on account of the importance of the subject. It commences with antimony, and concludes with specifications of machines for gold amalgamating and washing. One half the volume consists of drawings illustrating the specifications.

"Magnetism and Deviation of the Compass, for the Use of Students in Navigation and Science Schools." By John Merrifield, LL.D. Longmans.

"The Quarterly Weather Report of the Meteorological Society."

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

CHAPTER I.

On the evening of the 25th of January, 1872, at seven p.m., the brig *Maria* left Port Jackson. The *Maria* was an American-built brig of 167 tons register, and had probably been a clipper in her day; but being at the time more than twenty years of age, and having been employed during her latter years for the carriage of coals between Sydney and Newcastle, it would, perhaps, have been difficult to find a more unseaworthy old tub anywhere in the Southern waters. She was bought by the New Guinea Association, chiefly because she was the best available vessel that could be obtained, considering the limited means of the company; and also on account of the majority of the members becoming impatient at the numerous delays that had occurred, and being anxious to get away on any terms, many of them having come from considerable distances, and, consequently, having been put to great expense.

The New Guinea Prospecting Association was a company of seventy persons, formed for the purpose of making a settlement in the island of Papua, and there prospecting for gold, which, according to report, was plentiful; it was also intended to make some profit out of the adventure by trading with the natives, and laying in a cargo of the usual articles of South Sea Island traffic; and some of the company expressed their intention of permanently settling in New Guinea, and establishing a regular trade with the Australian Colonies, and, perhaps, also with China. The island, it is reported, abounds in all the usual productions common to the islands of the Pacific; and being of very great extent, this latter plan appeared a feasible one, supposing it possible to make a settlement, in spite of the climate, and, most probably, hostile natives. Though, no doubt, the *auri sacra fames* was the chief inducement to the majority, there were many to whom this was an entirely secondary consideration, many who were attracted solely by a love of adventure, and the field which was offered by so large and entirely unexplored a region for scientific investigations.

Some delay had been occasioned by the Customs objecting to clear the *Maria* on account of the number of passengers on board, and, after this difficulty had been overcome, we were further delayed by the sudden defection of the captain; in the end we were obliged to sail without him, taking our chief officer, Mr. Stratman, as captain. With a few exceptions, the passengers appeared satisfied with this arrangement, although entirely ignorant of the qualifications of the new captain.

Under these circumstances, on the evening of the 25th of January, 1872, we hoisted the signal for a steam-tug, and the *Goolwa* taking us in tow, we started down the harbour with a light south-west breeze. When just outside the heads, the *Goolwa*, on board of which were a few friends of some of the passengers, left us, and, after hearty cheering from both vessels, we bid adieu to Sidney harbour, and, with all our canvas spread, started for New Guinea. The breeze was, unfortunately, very light. We made little more than three knots, keeping well to the eastward in order to gain a good offing.* The weather continued favourable for two or three days, when we encountered baffling winds from the north and north-east, which lasted, varied occasionally by a dead calm, until about the 4th of February; during which time the passengers for the most part had overcome their sea-sickness, and had become thoroughly accustomed to their new mode of life. The fare, though plain and, perhaps, rather rough, was wholesome, consisting chiefly of salt beef, biscuit and potatoes, with fresh preserved meat and "duff" twice, and rice, pork, and pea-soup once a week; this ought to have been good enough to satisfy anyone, but, of course, as might naturally be expected among so large a number of men, there were a few who grumbled at everything. The men in the 'tween decks, sixty-six in number, were divided into messes of twelve in each, except mess No. 6, in which there were fewer; the occupants of the cabin were five in number, consisting of the captain, Mr. Stratman; chief officer, Mr. Sonnichson; second officer, Mr. Andrews; Dr. Tate, and the store-keeper, Mr. Goble. The four sailors paid by the Association slept in the fore-castle. Thus it will be seen that the total number on board of the *Maria* amounted to seventy-five men, perhaps rather too many for a vessel of her size, but as there were three large hatchways, the ventilation was very good, and, so long as fine weather lasted, there was nothing to complain of.

On or about the 1st of February, having sighted the steamer *City of Brisbane*, then on her way to Sydney, we signalled her, and sent a boat on board with letters. We were at this time off the Solitary Islands, and were much in the same position three days afterwards, having been becalmed most of the time, with a strong current setting to the southward.

About this time a southerly breeze sprung up, and freshened to half a gale, which lasted two days, and then gradually moderated. We made a very good run while the wind was strong, averaging about eight or

* Owing to the loss of his diary, the author has been compelled to give a very cursory and imperfect account of the voyage up to the thirteenth of February, but has had the use of some notes from that date, made by Mr. Coyle, and fortunately preserved by him.

nine knots ; and from this date, we had southerly weather up to the twelfth or thirteenth, when we were somewhere about 14° south latitude. We experienced some little annoyances during the first part of the southerly wind, as the weather was squally, with occasionally a good deal of rain ; and our decks not being the tightest in the world, we found it sometimes a little moist below ; but it was some consolation to us, that we could get plenty of water without the trouble of going for it, as it was only necessary to spread a water-proof coat in some of the berths, and a few gallons could be obtained in a very short time ; some, however, might have objected to drink it, on account of the decks being covered with tar, and the quantity of coal-dust collected in the seams. When the weather cleared, there was ample employment for everyone, in drying clothes and cleaning fire-arms, most of which had a thick coating of rust over them. The vessel had much the appearance of an old-clothes shop for a day or two after the rain, as every available rope was hung with clothes of all kinds, bedding and blankets of every conceivable colour.

There seems to be a scarcity of sea-birds on this coast ; we had seen but two or three species during the voyage.

After the wind had moderated, we had very enjoyable weather for about a week ; the breeze preventing our feeling the heat, which might otherwise have been disagreeable, as we were now well within the tropics. The pleasantest time of the day, however, was after we had finished tea, when a select party of us would collect on the after-hatch, and, there reclining, would beguile the time with conversation, and from time to time with a song from those whom nature had endowed with voices. At other times I would play on my flute, airs reminding me of home and friends, with great pleasure to myself ; but, as I was only a beginner, to the doubtful amusement of others. Alas ! many of those with whom I spent such pleasant hours—hours never to be forgotten, are now no more, the waves of the Pacific roll above them, or their whitening bones lie on an inhospitable shore. They little thought, when they left their homes so full of bright hopes, that they were leaving them never to return, that they were leaving a vacant place at their firesides never to be refilled, that the sorrowing friends they left behind them would see them no more, till the sea gives up her dead. May God comfort them !

CHAPTER II.

On the 13th of February, the Southerly breezes that had so long accompanied us, came to an end, for on the afternoon of that day, the wind had shifted round to the north-west, and we were again doomed to have a week of adverse weather and contrary winds : indeed this may be

considered as the commencement of our misfortunes, for had the fair winds continued, in another day or two we should have been in sight of the promised land, on the shores of New Guinea. It was very disheartening no doubt, having so nearly reached the end of our journey, that we should meet with such unfavourable weather, but perhaps it was for the best, perhaps some of us who have been saved from the wreck, might have fallen victims to the miasmatic influences of a tropical climate, or to the hostility of the savage races inhabiting the island to which we were bound.

As the evening advanced, the breeze freshened; our course was about N.N.E. and we scudded along carrying all sail, at the rate of six knots. The wind during the night increased slowly, and towards morning the sea rose, and the sky was covered with dark clouds. About eight a.m. one of the sailors, who had been at some work on the main-topgallant yard, came down and reported it quite rotten, and said that he could push his knife into it up to the handle; he advised the mate to take the sail in, but this was not done: about a week previous to this, another of the sailors had said the yard was unsafe, notwithstanding which nothing had been done to it. Not many minutes after this, away went the yard, parting right in the centre; the captain rushed out of the cabin, on hearing the noise, and "All hands aloft to get in the sail" was the cry. This was safely managed after some trouble, and the broken pieces of the yard lowered. This was our first casualty, but unfortunately, not the last; it was, however, a most fortunate thing that it happened when there was no one aloft, as in that case it would most probably have resulted in the loss of one or more lives. The wind continued to freshen during the day, and at eleven p.m., or thereabouts, our fore main shroud was carried away; towards evening, as it was blowing almost a gale, and the sea rising very fast, the captain took in sail, and we staggered along under close-reefed top-sails and fore-topmast staysail. Shortly before twelve o'clock that night we were startled by a crash, and coming from under the shelter of the after-hatch, I beheld through the darkness a mass of broken planks amidships on the port side: it appeared that a heavy sea had struck her on the weather side, and staved in about eight or nine feet of the bulwarks; there was very little damage done, but in the darkness of the night and amid the howling of the wind and sea, it looked much worse than it really was. We at once set to work to clear away the broken pieces and stow them below, but no attempts were made to repair the damage till next morning, with the exception of fixing the rail in its place. The captain soon after this put the vessel before the wind, and ran during the remainder of the night.

The morning of the fifteenth broke, but there were no signs of the gale abating, however, owing to the quantity of rain, the sea, though

very high, was not as rough as it would otherwise have been. The day was spent chiefly in repairing the broken gangway, securing the boats more effectually, and mending and strengthening the rigging, which was in a frightfully rotten state, many of the shrouds having parted some of their strands, and pieces of the dead eyes having broken away in various places.

I may as well mention here that Coyle and myself, though both landsmen, had taken sailors' duty from within a few days after we left Sydney, both for the sake of something to do, and also with a view to learning something about the management and working of a ship, so that at the time this gale commenced we had learnt enough to be occasionally of some little use.

Friday, the 16th, was also spent in endeavouring to repair and strengthen the rigging, &c., as well as the weather would permit; wondrous to relate, we had some coils of new rope on board, notwithstanding our general bad outfit. If I remember rightly, we were hove to, during the greater part of the day, and from this time, we were alternately running and laying to during the remainder of the gale, according to the captain's judgment as to which was the best under the circumstances. The weather continued much the same, and as night closed in, it was indeed gloomy: the rain pouring in torrents during the greater part of the time, the sea running mountains high, the wind roaring through the rigging, and the night dark as Erebus. At about one a.m. a heavy sea again struck the old brig, and this time the damage was of a more serious nature, as the tiller was carried away from the rudder-head, and with it the wheel and gear. Fortunate it was, we were hove to, or in all probability the decks would have been swept fore and aft, and nothing more would have been heard of the *Maria* and her crew. The carpenters, assisted by Hargrave, at once set to work to repair our disaster, and by fixing blocks and tackle to the rudder, the vessel was kept on the wind, while they were employed in getting the remains of the old tiller out, and adjusting a new one, which was done by means of one of the handles of the windlass being fixed in the rudder-head as a tiller, to which a rope and blocks were fastened. This answered the purpose tolerably well, but made the steering so much more difficult that two hands had to be kept at the wheel, or rather "steering apparatus."

Daylight of the 17th dawned on a very dreary-looking scene; the sea was as high as ever, dark murky clouds being driven across the sky by the never-ceasing wind, the vessel rolling tremendously, hove to under the lee clew of the maintopsail; and the bulwarks on the port side presenting much the appearance of a piece of wicker-work, as boards were carried away here and there along the whole side. Down below the

scene was perhaps still more miserable ; main-deck, tables, berths, and everything in and under them, simply deluged with water ; stools upset, water-kegs rolling about, and the passengers lying about in every imaginable position, on the floor, and under and on the tables, most of them wet to the skin, trying to get a little sleep. In fact, there were only two or three dry berths in the ship, with the exception of those in the fore-castle, two of which last, Coyle and I, being in the port watch, were lucky enough to occupy when the starboard watch turned out.

During the whole of the day and night the gale still blew ; but on Sunday morning, the fifth day, appeared to abate, though very slightly, so the captain set the foresail, and tried to sail on the wind ; however, before very long, the sail split right up to the yard : on this occasion, two men being at the helm, and the rest of the sailors otherwise employed, the first mate, Hargrave, Solomon (assistant cook), Arkley (sailor), and myself, went up and took it in : this was the only time I had been aloft in rough weather, as I considered I would only be in the way, when there were sailors to do it.

Several of the passengers by this time had had enough of the gale and the *Maria* ; and a number of them formed a deputation to the captain, requesting him to run for the nearest port, when they would leave the vessel, and give up all share in the expedition. The captain submitted the question to the members, and after some deliberation, it was decided to run for Moreton Bay ; there were other reasons also for making some port, which were that the *Maria*, after so much bad weather, required repairs which could not well be managed at sea ; besides which, more materials were necessary, such as ropes, timber, etc.

Towards evening the wind had again increased, and was blowing as strongly as ever. We continued to run with the wind about a point on the starboard quarter, most of the time having our fore-topmast staysail set, but sometimes running under bare poles ; the sea was very high, but the old *Maria* proved that she had some weathery qualities, for had she not behaved wonderfully well, in fact, far better than was expected of her, she must inevitably have been swamped. During this time the lee rail was frequently under water, and our port side was becoming more like a basket than ever, and a great many pieces of the rail had come away on the starboard side. At about four o'clock on Tuesday morning, when Wraight (one of the sailors) and myself were at the helm, the assistant storekeeper ran aft with the cry that the tanks had all got loose : this was a very startling announcement, as if such were the case, they would very soon knock a hole in the vessel ; however, I did not believe it, knowing that he was a man who was very easily alarmed ; and it proved on examination that two of the tanks had slightly shifted, but there was no very immediate danger. Soon after this it was reported

that the vessel had sprung a leak and was sinking, and when Sanderson and Coyle came to relieve the wheel, for which I was not sorry, I found that they were baling the water up in buckets, and passing them up the after hatch, the pumps being hard at work in the meantime; before very long the water was got under, and from this time the wind began gradually to moderate, and to veer round to the southward.

As the wind shifted, so were we obliged to alter our course, as we had no choice but to run before it, and the captain decided to make for Cleveland Bay, which was the nearest port we could steer for under the circumstances. About seven o'clock a glass of grog was served out to all hands, and soon after this orders were given to get the large whale-boat on board, as the weight of the boat on the davits was gradually breaking away the rail on the port side. The first mate got up, and began to undo some of the lashings; meanwhile Wraight was leisurely walking towards the place, when the captain sharply ordered him to get up in the boat at once and help the mate, which Wraight refused to do, saying it was not safe. The captain again ordered him to go, in rather strong language, and after some time, he complied. With some difficulty the boat was safely got in, and housed on deck; after which, the captain called Wraight to account for his conduct; he replied that he considered his life worth as much as any other man's, and saw no reason why he should endanger it, and added that he always did his duty when he could, and did not require to be bounced into it; whereupon the captain struck him in the face; they then grappled with one another, and a fierce struggle ensued. I was standing close beside them at the time, so caught hold of them, and endeavoured to part them; after some little time, they mutually let go their hold. Wraight then told the captain that he would not hit him—that he had a better remedy than that, but that he should not forget it, saying, also, that it would be useless for the captain to fight him, as he could hammer a dozen like him, at the same time shaking his fist in his face. The captain immediately rushed to the rail, and seized a heavy belaying pin; whereupon Wraight drew his knife, and a deadly contest seemed imminent; but, fortunately, there were several people between them, and they were both persuaded to retire. The captain, however, on reaching his cabin, sent for the sailor, and put him in irons. This excited a great deal of indignation among the passengers, and a great number went aft, and demanded his release, which, after some words, the captain consented to do; had he not complied with this request, it is not unlikely that something approaching a mutiny would have been the result, as the men looked very much inclined to take the law into their own hands, and there is no doubt that the captain was in the wrong.

The wind continued to moderate, and the sea gradually went down, to

our great relief, as we were able to make things a little more comfortable below. On this, and the following day or two, the *Maria* again had the appearance of an old clothes shop; very few had a dry stitch, either on their backs or off them. There were one or two only who had water-tight boxes, and who were, consequently, comparatively well off. My own box, fortunately, had very little water in it, and my ammunition had escaped the general soaking.

On the 21st, I took my firearms on deck, to clean them; my rifle was in a frightful state of rust outside, but the inside was tolerably free from it; my other arms were not much better. Cleaning the rifle alone occupied me the whole day, so its condition may be better imagined than described. We were now able again to have our meals comfortably, without the danger of having soup, tea, &c., upset all over the deck, or, perhaps, into one's lap; in fact, we were frequently on very short rations during the gale, as, owing to the brig rolling so much, the boilers would hold little more than half the usual quantity.

The crew were employed during the fine weather in repairing damages generally, and in bending a spare mainsail, as the one we had been using required a little mending. At a little after two p.m., on the 22nd, we sighted rocks on the port bow at a distance of several miles; a few minutes afterwards there was a cry of "Breakers right ahead!" and "Hard up helm!" was the word. Our course at this time was about west; and, when the reefs were sighted, we stood away to the north-west, leaving the rocks to the southward. The captain said that this reef was marked on the chart as doubtful, which seems rather extraordinary, as it is of very large extent, and some of the rocks very high; he also stated that its position was wrongly laid down on the chart, or, otherwise, that his chronometer was wrong.

Nothing of any importance occurred during the two following days, but in the middle watch on Saturday night, or, rather, on the morning of Sunday, the 25th, just as Coyle and I had made ourselves comfortable in the cook's galley, we were again startled by the cry of "Breakers ahead!" We rushed out, and went aft. Sanderson at once went to the helm, to help Wraight, as it was no easy matter to move it, and Coyle and I began to brail in the trysail; in this we were assisted by the hands at the pumps, and the ship was quickly got away before the wind, again leaving the reefs to the southward. This was the commencement of the Barrier Reef. About two hours afterwards, breakers were again sighted ahead, and we again stood away to the northward. Some hours elapsed before any more breakers were seen, but during the remainder of the day we saw little else but white water, sighting reef after reef in quick succession, so that I should imagine that, by the evening, the ears of everyone on board must have been thoroughly accustomed to the cry of "Breakers ahead!"

A little before sunset we came in sight of land to the westward. I went aloft, and joined Davis (one of our watch) on the foretop-gallant yard, to have a look at it; as far as the eye could see, lines of breakers were visible on either side, while immediately ahead of us appeared to be clear water.

(To be continued.)

GENERAL.

CHARGE OF MURDER.—Henry Arnott Scott was indicted for having on the 22nd March last, on the high seas, on board the British ship *Arlington*, wilfully murdered Albert B. Tomlin. The *Arlington* left Liverpool for Philadelphia on the 22nd February last, when the deceased joined as an ordinary seaman. A day or two after the vessel sailed the deceased was reported as being dirty, and the master ordered him to be removed from the forecabin to sleep in the coal locker. From that time the prisoner, who was chief officer, commenced a systematic course of cruelty to the deceased, striking him with knuckle-dusters, and depriving him of meat and food until he became much reduced in strength, and unable to perform his duties. On the 21st March the prisoner entered the locker where the deceased slept, with a belaying pin, with which he struck him several times on the head, and having stamped upon him, dragged him out of the locker. The deceased endeavoured to walk, but fell upon the deck exhausted. Two of the crew then removed him to the coal locker, where he died in about an hour. Evidence was given that the mate had been in the habit of striking the deceased with the belaying pin, and kicking him, and that after death a number of large wounds were found upon his head, and several of his ribs were broken. It further appeared that the day before the deceased's death the master struck him on the back of the head with the capstan bar. The defence was that the acts committed by the prisoner were not the cause of death, which might have been produced by the blow from the capstan bar. The prisoner was found guilty of manslaughter, and sentenced to ten years penal servitude.—Crown Court, Liverpool, 14th August.

CHARGE OF MURDER.—William Davies, an able seaman, of the British ship *Mora*, was indicted for having on the 26th June last, on the high seas, wilfully killed and murdered William Henry Draycott, master of

that vessel. The vessel left Demerara on the 8th June, and all went on well up to the 26th June, when the prisoner complained that the men had not had their proper allowance of vinegar. Subsequently the prisoner refused to go aloft to do some work, and said to the deceased, "Either you will kill me, or I will kill you." The deceased walked up to the prisoner and gave him a shove, upon which a struggle ensued, and the prisoner stabbed deceased in the breast with his knife, causing his death in twelve hours. The defence was that the blow was struck in anger, and the crime committed in hot blood. The jury found the prisoner guilty of manslaughter, and he was sentenced to penal servitude for 20 years.—Crown Court, Liverpool, 17th August.

EXTRA MASTERS WHO HAVE PASSED IN COMPASS DEVIATION.

Name.	Christian Name.	Number of Certificate.	Where Examined.
Way	Arthur	89,288, Ex.	Liverpool.
Thomas	William	89,681, Ex.	"
Taylor	Joseph W.	91,141, Ex.	"
Irving	Peter Jno.	86,098, Ex.	"
Owen	William F.	6,402, O.C. (Voluntary)	London.
Horn	Oscar M. L.	498, Ex.	Liverpool.
Bigley	William B.	86,411, Ex.	"

SHIPPING SEAMEN IN AMERICAN PORTS.—It appears from the *Manchester Examiner*, that "a new Act of Congress relative to the shipping of seamen in American ports, which is of interest to British shipowners and masters, comes into effect on the 6th of August, and is designed for the protection of the sailors against the gross injustice they frequently suffer in New York and other ports. The Act provides for the appointment of a shipping commissioner at each port, who is to afford facilities for engaging seamen by keeping a register of their names and reputations, to superintend their engagement and discharge, to provide means for securing the presence on board of men so engaged, and to facilitate apprenticeships for sea service. Kidnapping or 'Shanghaiing' seamen is prohibited, under penalty in each case of \$200, for which the ship is held liable. Persons who conceal themselves on board to steal a passage, or 'stowaways,' are construed as not coming within the meaning of this section of the law. Apprentices, at least twelve years old, may be shipped, but the term of service is to end at eighteen. Stringent provisions regulate the pay and discharge of seamen. The seamen may, for his advanced wages, give a cheque upon the shipper payable to order within a specified number of days after the vessel sails. Upon the com-

pletion of the voyage, all seamen must be discharged and receive their wages in the presence of a shipping commissioner, and a penalty of \$50 is imposed on any master or owner of a ship who, within the United States, discharges or pays wages in any other manner, excepting by order of a competent court. Every master must, not less than forty-eight hours before paying off or discharging any seaman, deliver to him in the presence of a shipping commissioner, a true account of his wages and all deductions to be made from them. During the voyage, the master must enter in the log-book the various matters in respect to which the deductions from the seamen's wages should be made. Every seaman is entitled to one-fourth of the balance of wages due to him when discharged, and the remainder, if in the coasting trade, within two days after his discharge, and, if in the foreign trade, within five days after his discharge, or three days after the cargo is delivered, whichever happens first. In the coasting trade, owners, consignees, or masters of vessels may act as shipping commissioners. Penalties are imposed for charging excessive fees, the list of fees being fixed by the law. Charles C. Duncan is the shipping commissioner for New York, and has organised his office with a staff of twenty assistants, of whom six are deputies, with power to act for him. Captain John H. Young, is shipping commissioner for Philadelphia." It appears to us that the United States are following pretty closely the Merchant Shipping Acts of the United Kingdom. This attempt by the United States to put down crimping is not taken a bit too soon. There is one point in the above *resumé* that we hope is *not* true—viz., that the *ship* is to be held liable for a penalty of \$200 for "Shanghaiing" and kidnapping. It seems to us that to hold the "*res*," liable in such cases is one of the most monstrous attacks on shipping that it has been our duty to notice.

MEMORIAL TO SIR JAMES CLARK ROSS.—Nearly five years ago at a meeting of the Royal Geographical Society, Admiral Ommanney proposed that some memorial should be erected to that distinguished navigator, Admiral Sir James Clark Ross, the discoverer of the North and South Magnetic Poles, and also of lands in both regions. At the time, Admiral Ommanney did not reap much encouragement in the prosecution of his wish, but he persevered, and by assiduously taking advantage of every opportunity that presented itself, he raised sufficient funds to enable him to consider what form the memorial should take, and after consulting many of the subscribers, it was resolved that a portrait should be painted and placed in the Painted Hall at Greenwich, as a companion picture to that of Sir James's renowned predecessor, Captain Cook; and the permission of the Lords of the Admiralty having been obtained, the task of painting the portrait was confided to Mr. Stephen Pearce. The portrait was exhibited at the Royal Academy last year, and as a work of

art was much approved, whilst those who personally knew the original testified to the faithfulness of the portraiture. Within the last month the memorial painting has been sent to its destination, and is now placed near that of Captain Cook, and we heartily congratulate Admiral Ommanney on the successful termination of his labours. We may add that the portrait has been beautifully engraved by Mr. Alexander Scott, and published by Graves, of Pall Mall. A copy has been presented to each subscriber.

PROBLEMS.

ANSWER TO PROBLEM 4.

THE law of gravitation asserts that all particles of matter naturally attract one another in the ratio of their respective masses, and inversely as the squares of their distances increase.

Applying this law to the moon, it will be seen that she is more particularly subject to two attractive influences—that of the earth and the sun; the comparative proximity of the former enables it to bring the moon under its own sway, and to force her to describe an orbit of which the earth occupies the central position; while the mass of the latter is such that the moon is never free from its powerful influence, the tendency of which is to break the moon away from the control of the earth, and to thus make itself the centre of the moon's orbit.

Again, as all particles of matter are *reciprocally* attractive, the planets, in their respective orbits, are each exerting an attraction upon the earth, the combined effect of which at the present time has been found in the decrease of the eccentricity of its orbit—that is, the earth's path round the sun is, from this cause, becoming, by an almost infinitely slow change, more circular, and, therefore, the earth is thus increasing her distance from the sun, and, necessarily, taking the moon with it.

Now, as the attractive influence of one mass upon another decreases as the square of the distance between these two bodies increases, it is evident that as the moon increases her distance from the sun, that not only will the sun have less power over her, but it follows that the earth having a smaller opposing force to overcome, will necessarily have an increased power over her, the effect of which will be, that *the moon is drawn towards the earth*, thereby causing a contraction of her orbit, an increase in her rate of motion, and, as a consequence, a decrease in the time taken by her to describe it.

WILLIAM C. SEATON.

Halifax, Nova Scotia, July 15, 1872.

THE
NAUTICAL MAGAZINE.

NEW SERIES.

OCTOBER, 1872.

P I L O T A G E .

ANOTHER codicil has been added to the Merchant Shipping Act of 1854 in the shape of the Merchant Shipping Act, 1872, one section of which is devoted to pilotage. We propose to consider briefly the scope of this section, and then to offer a few observations on the question at large.

Hitherto, any Trinity pilot taking more or less than the authorised sum for the pilotage of a vessel has been subject to a penalty of ten pounds. One of the three clauses in the new Act, however, provides that "the Trinity House may, by bye-law made with the sanction of Her Majesty in Council, repeal or relax the provisions of that section (sect. 358 of Merchant Shipping Act, 1854) within the whole or any part of their district so far as to allow any pilot or class of pilots under their jurisdiction to demand or receive, and any master to offer or pay, any rate less than the rate for the time being demandable by law."

Another and more pretentious pilotage clause in the Act is of much less general importance; indeed, its object seems scarcely to warrant the use of the cumbrous machinery of parliamentary legislation for its accomplishment. That object—the placing the contributions of the Cinque Ports' pilots to the Trinity House Pilotage Fund on a more satisfactory footing—is now, however, achieved. The subject is not of general interest, and it is, therefore, needless to go into details, but there is little doubt that the Cinque Ports' pilots have reason to congratulate themselves, and that the Trinity House, who, in all probability, initiated the measure, has acted wisely in so doing.

It is the clause respecting the pilotage rates which is of importance to the shipping interest, as it opens up the whole question of the pilotage of our coasts. It seems that the Trinity House has in view the ultimate opening of the pilotage of the Thames, above Gravesend, "to all competent male persons, without restriction as to age or previous occupation;" but the 358th section of the Merchant Shipping Act, which, as we have said, inflicts a penalty on any pilot taking more or less than the sum demandable by law for piloting any vessel, would, without fresh legislation, have nullified the effect of throwing open the pilotage above Gravesend, because there could be no competition while the rates remained so rigidly fixed by law. It was, therefore, to circumvent this obstacle to free trade in the River Thames that the clause was introduced. This legislation, however, is merely permissive: it still remains for the Trinity House to take the necessary steps to bring about the state of things contemplated in respect of pilotage rates, but it is not likely that the new clause will long remain a dead letter. We may, therefore, expect that very soon this modicum of free trade will be introduced into our pilotage system, and that the little leaven will soon leaven the whole lump.

It is somewhat curious to notice the numerous complications which now exist in our pilotage system—complications which have grown up with that system—and which are the results of repeated attempts to redress grievances, or to conform to altered conditions and opinions. It is not surprising that agitation has been pretty well applied to the subject, and the chronic state of unrest which seems to us to have characterised it, is probably the result of the anomalies which have been created at various times by the introduction of small changes. The pilotage system in England is patchwork without design; there is plenty of variety, and, we must add, plenty to confuse the mind. The wish has apparently been to please everybody, at different times, and at last the time has arrived when everybody is dissatisfied. What else is the meaning of the grumblings and murmurings of shipowners, shipmasters, and the pilots themselves? To investigate each individual grievance is not our present intention; we leave that to philanthropic and well-meaning legislators; our business is to regard the matter comprehensively, and to say what we think should be done to benefit the whole maritime community.

Stated in general terms, the chief causes of discontent in regard to pilotage are, firstly, the monopoly of a lucrative profession in the hands of a limited number of men, which monopoly is under the protection of and maintained by the law; and, secondly, the compulsion to employ a

pilot in pilotage waters, which, independently of its supporting the monopoly, is considered by many owners and masters as objectionable in itself. For our present purpose it is unnecessary to follow out other evils of the present system of pilotage, although they are numerous. It is quite clear that things are not placed on a satisfactory basis.

In the early days when pilotage was perfectly free, there were but few men who adopted the profession of a pilot. Commerce was then trifling as compared with these days, the livelihood to be gained by piloting was very precarious, and masters picked their way in dangerous localities as well as they could—for they could not trust men whose only guarantee of their competency to take charge of a ship was their bare word. As our shipping trade enlarged, the state of things became serious: numerous wrecks occurred through the ignorance of masters, or of unprincipled persons calling themselves pilots who undertook the charge of vessels. The Government considered it necessary at length to do something towards putting a stop to the loss of life and property, and after much deliberation the system of compulsory pilotage was established. Certain localities round about the coast were marked out and called pilotage waters; each district was supplied with a limited number of pilots, who by license were certified as competent to conduct vessels in that locality. Properly constituted authorities at different places were empowered to examine and to license such men, to exercise a general control over them, and to fix the rates to be charged. Then, to raise the *status* of the profession and to make it worth while for men to enter it as well as to prevent ships from being carelessly navigated by incompetent persons, it was enacted that a shipmaster on coming into dangerous waters should be compelled to employ a licensed pilot. Thus a monopoly was established in days when monopolies were not regarded with so much disfavour as now, and when such a monopoly was well calculated to be of service to a young and growing trade.

But, *tempora mutantur*. Our shipping trade has grown colossal, our ports are thronged with vessels from all countries, the demand for qualified men to navigate these ships in crowded waters and amongst the intricate channels and submerged dangers which characterise our coasts, is enormously increased, and we are of opinion that it is now beyond the power of an Executive Department to adjust the supply to this demand by artificial rules. Protected monopolies are, even at this day, useful in some cases. Broadly speaking, we may say that, for those things which are certain, for contingencies which can be accurately calculated, and when it is for the good of the whole community, the principle of a protected monopoly may well be adopted. For instance,

in our postal service, the actual requirements can be accurately determined, and the whole letter-carrying work reduced to a system conducted by the Government alone for the benefit of the entire population. But it would be absurd to allow any person who pleased to compete with the Government and to start a postal service on his own account. Again, as regards the lighting of our coasts, it is far better for the community that it should be in the hands of the Trinity House than that any one should be allowed to set up a lighthouse wherever he chose. But, as respects pilotage, it seems to us that there is an element of uncertainty about it. The pilot's business is entirely dependent on ships coming and going, and these again are dependent on wind and weather, and the increase or falling off in trade, influences which seem to us almost as variable as those which provide work for the doctor, the lawyer, and the undertaker. These callings are all open, and there is no complaint of the demand for them not being supplied; each of them has to stand on its own merits. Why not that of a pilot? Surely piloting is no baby profession which requires to hold on to the apron-strings of a maternal Government! We strongly advocate, therefore, the abolition of restricted numbers, and we should like the profession of a pilot to be purely voluntary as regards entry into it. We say, let it be free for any man, irrespective of age, to offer himself for entry; but, as now, let him show that he is competent to perform the duties. Let him be, as now, certified by license as to his capability, and let him conform to discipline. If he neglect his duty, we would make the consequences more penal than they now are. That these provisions for good pilotage service should be made is only right, in the interests of humanity, for the importance of a pilot's duties cannot be too highly estimated.

Further, we consider that the rates chargeable for pilotage should have sufficient elasticity to enable them to be adapted to different conditions. We do not see our way to advocating an entire abolition of fixed rates; both in the interests of the shipowner and the pilot, it seems that there should be limitation to prevent, on the one hand, extortionate demands from pilots in bad weather; and, on the other, insufficient remuneration to the pilots. The circumstances appear to us exceptional, and hardly to be regulated by the ordinary principles of free trade. We would suggest, therefore, whether it would not be advantageous to have the rates so regulated that a pilot should be better paid for conducting a vessel in bad weather than in fine; that small vessels should pay less than large ones; and that vessels with valuable cargoes should pay more than those with cargoes of less

value. An intelligible scale of charges might easily be drawn up by which any master would know what he must pay, and any pilot what he could claim. It is needless for us to go into the details of the rates to be charged, they could be settled far better by the authorities, who are well acquainted with the necessities of the case. It is more than probable that such changes as we have hinted at would introduce into the profession a little healthy competition among the pilots, by which the best men would be the most successful, and vessels would be supplied with pilots quite as efficiently as by the present arrangements.

A few words now as to the principle of compulsion to employ pilots. As the law now stands it requires, with a few exceptions, (see sect. 379) that every vessel approaching our shores should employ a pilot, and we cannot but admit the principle to be wise and humane. It surely is a just and reasonable enactment which provides that life and property among the dangers of our coasts shall be entrusted to those men only who have proved their special acquaintance with those dangers. There is, undoubtedly, much wisdom in not allowing over-confident and economical masters to try the effects of their indifferent knowledge in navigating their vessels through difficult and dangerous waters. It is, however, contrary to the spirit of free trade to force a man to make use of a certain commodity, and it may be conceived that in a perfect state of society it would be needless to compel a man by law to do what is obviously to his own advantage. But we are very far from perfection at present, and in respect of this compulsory system, we fear it is impossible at present to venture right out into perfect freedom. In this case we think it would be better to attain the desired object by evolution rather than by revolution. We are growing towards it, and the time will come, we do not doubt, when pilotage, like many other things, will be governed by natural laws, independently of any artificial aid. In the present state of trade and shipping, the principle of compulsion as now applied, though, perhaps, wrong in theory, is more beneficial than harmful. Only this much we would urge strongly, that by the generic word pilot we mean any man who is competent to navigate a vessel in dangerous waters; and if the master of a ship is able to do that duty for himself, he is a pilot, and we say by all means let him navigate his own ship, and not be compelled to employ another man. Only as the Board of Trade require a master to prove his competency to command a vessel, so let him take advantage of the 340th sect. of the Merchant Shipping Act and prove his ability, and be certified accordingly, as competent to conduct his vessel in pilotage waters. For the present, it

seems to us that in respect of the compulsory employment of pilots, as much freedom exists as is expedient.

THE BRITISH CONSTITUTION AND GOVERNMENT :

A DESCRIPTION OF THE WAY IN WHICH THE LAWS OF ENGLAND ARE MADE AND ADMINISTERED.

(Continued from our September Number.)

CHAPTER XI.—THE ADMINISTRATION OF JUSTICE.

IN the course of the preceding chapters describing the machinery by which the laws are made, we have noticed that much of the law is administered by Ministers of State as representing the Sovereign, and we also have noticed that the administration of the law by officials representing the Privy Council or any department of the State is confined to making regulations for the conduct of public business, and issuing instructions for the guidance of those charged with the administration of the law throughout the country. Justice is administered by Magistrates and Judges on the Bench. No Minister of State, however high his position, has the power to inflict punishment, or impose penalties, for a wrong done by the meanest subject of the Crown, even though the offence be committed against the State itself, and not against a fellow subject. There is only one instance approaching an exception to this distinct rule; and that instance may be taken also as an illustration of the precision with which the rule is observed. In cases where an Act of Parliament imposes a penalty for evading the payment of a tax, the Commissioners of Inland Revenue have the power, not of inflicting a penalty, but of offering to those who they believe have offended against the law the option of paying a mitigated penalty. They have no power to enforce payment, and if an alleged offender decline to comply with the offer, the Crown has no other means of recovering the penalty than that of proceeding against the offender in one of the ordinary Courts of Law. So that although it is the Sovereign who is wronged and the State which suffers by the act of the offender in this case, yet the Crown must sue him in one of the Courts constituted by Parliament, and before one of the Judges appointed to administer justice. Nothing can exhibit more clearly one of the most striking characteristics of our Constitution—the equality of all before the law—than such a case as this. Still, stated thus baldly, room might be given for doubt whether the subject would receive justice at the hands of a Judge appointed by the same authority as that which comes

as a suitor before it. We shall see presently whether there are any grounds for this doubt, and to decide the matter fairly, we must first consider who are appointed Judges, and under what circumstances they are appointed.

Judges and Magistrates of all descriptions are nominated by one or other of the Ministers of the Crown, with few exceptions, and in the case of these exceptions the appointments must be confirmed by a Minister of State before those appointed can act. Judges of the Superior Courts are appointed from among Barristers of long standing who have achieved a high reputation as counsel in pleading the causes of suitors in the Courts. Sometimes, though not always, appointments to the Bench are made as rewards for political services rendered to the Cabinet in the House of Commons; but in no case can such rewards be given with impunity unless the legal standing of the persons nominated justifies the appointment. They retain their office for life, or until promoted, and their full salary is secured to them as long as they continue at their posts. The Sovereign cannot dismiss them, nor do they retire on the demise of the Crown. No Judge can be removed from the Bench except upon conviction for some offence, or upon an address to the Crown agreed on by both Houses of Parliament, praying for his removal. To secure this, it would be necessary to prove him guilty of some dereliction of duty. If, for instance, it could be proved that he had received a bribe to give judgment in a particular way, or gave judgment from favoritism rather than in accordance with the law, nothing more would be needed to displace him. Happily, no such case has been even suggested for many years past; and the purity of the English Bench in the present day stands higher than the Bench of any other country of any period. It is not difficult to discover the cause of this. The fact that a Judge cannot be removed from office except in consequence of his own misconduct, renders him perfectly independent of all influences which can possibly be brought to bear upon him by those higher in authority than himself. He is independent even of the Sovereign, in whose name he administers justice, and of the Heir to the Throne in whose name he would act should he survive the Sovereign who appointed him. It is true he may have hopes of preferment, but then his decisions are duly recorded in the Law Reports published by authority, are liable to be criticised, and may be reviewed by a Superior Court. As a Judge is more anxious to achieve the reputation of being a sound lawyer than to gain preferment by pleasing individuals, it has come to pass that no consideration has been found sufficient in these latter days to induce an English Judge to abuse his office.

Therefore, a subject need not fear to take his case even as against the

Crown into a Court and leave the matter in the hands of the Judge. In some cases, to be hereafter specified, he must do so, but in all cases of personal liberty, and in most cases of disputes about money matters, the subject has yet another security: the facts relating to the question at issue must be tried by jury.

Trial by jury is regarded as one of the chief securities of our liberties, and the right to such trial has always been jealously maintained. It is disputed whether we inherit the custom from the Anglo-Saxons or the Normans; probably it prevailed among both nations before the Conquest in one shape or another. Some authorities trace the origin of the custom to the Greeks and Romans; but the method of trial by jury, as we at present understand it, was not fully adopted until as late as the fifteenth century.

Originally, the jury consisted of twelve men, summoned from the neighbourhood where the disputed fact was supposed to have occurred, because, in the words of the original form of summons, they were the persons "by whom the truth of the matter might be better known." They were sworn "to speak the truth," and from such records of trials at that time as we now possess, they seem to have been regarded merely as witnesses called to inform the Judge as to the facts, or perhaps to pass an opinion on the credibility of the actual witnesses in the case. If a juror declared in open court before the trial that he knew nothing of the matter respecting which he had been summoned to speak, he was dismissed and another was summoned in his stead; moreover, they were punished for perjury if they gave a wilfully false verdict, or hesitated in stating their opinion upon a matter of notoriety. Now, however, the jury of twelve are taken, not from the neighbourhood where the matter in question is supposed to have arisen, but from any part of the county; they are not required to know anything of the matter, but are required to dismiss from their minds all they may have heard in the shape of common gossip respecting it; they are required in fact to hear the statements made by the witnesses on the one side and the other, to form an opinion as to the truth of those statements, and to give a true verdict according to the evidence placed before them. Lord Chief Justice Hale, describing the duty and powers of a jury, has said "they are to consider the evidence, to weigh the credibility of the witnesses and the force and efficacies of their testimonies wherein they are not precisely bound by the rules of the civil law—*viz.*, to have two witnesses to prove every fact, unless it be in cases of treason, nor to reject one witness because he is single, or always to believe two witnesses, if the probability of the fact does, upon other circumstances, reasonably encounter them; for the trial is not here simply by witnesses, but *by jury*; nay, it may so fall out that a jury, upon their

own knowledge, may know a thing to be false that a witness swore to be true ; or may know a witness to be incompetent or incredible, though nothing be objected against him—and may give their verdict accordingly." In all cases where a jury is employed, then, they alone determine which party has the truth upon his side ; the Judge only expounds the law to the jury, registers their verdict, and passes judgment upon the basis of it. When we consider that this is the common practice in all cases where a man's liberty is at stake, or where two men are in dispute, we must come to the conclusion that trial by jury is no small security that the decision will be fair, although mistakes may possibly result.

Nor is it a small matter for a man upon his trial, or for such as are appealing to the law against injustice, that those whom they desire to appear as witnesses in their favour can be compelled to attend. This is done by a Writ of Subpœna, which was first issued out of Chancery by John de Waltham, appointed Keeper of the Rolls in the year 1381. Much dissatisfaction was felt by some who were thus compelled under penalties to act as witnesses when first the writ was issued, and petitions were presented to Parliament against a continuance of the practice ; but it was found to be of such service that it has ever since been maintained as a matter of right and justice to those whose case is submitted to the judgment of the Courts.

Reviewing the process by which the Judges are appointed, and remembering that they pass judgment in accordance with the verdict of a jury, we find that not only does constitutional usage place the judicial authority beyond the personal control of the Sovereign, but takes it out of the hands even of the actual Judge himself who does not administer the law until the jury have decided upon the facts. Further, we find that the jury, for whose declaration the Sovereign and the Judge wait before giving the law effect, do not form a permanent body who could study how the power they possess might be used to promote their private advantage, but are called together haphazard, never, perhaps, having served before, and without much probability of being called upon to serve but once or twice again. M. de Lolme, who wrote in praise of the British Constitution during the last century, elaborates this reflection, and adds :—

“ In fine, such is the happy nature of this institution, that the judicial power, a power so formidable in itself, which is to dispose, without finding any resistance, of the property, honour, and life of individuals, and which, whatever precautions may be taken to restrain it, must in a great degree remain arbitrary, may be said in England to exist—to accomplish every intended purpose—and to be in the hands of nobody. The consequence of this institution is, that no man in England ever

meets the man of whom he may say, 'That man has a power to decide on my death or life.' If we could for a moment forget the advantages of that institution, we ought at least to admire the ingenuity of it."

The liberty of the subject is further secured by two other leading principles: the law can be put in force by any subject in the realm, and none can be imprisoned without lawful cause, nor long detained without trial. Not only can any person who feels a wrong has been done him by another appeal to the Courts for protection or redress, but any person knowing a crime has been committed, may, in the name of the Crown, set the law in force against the wrongdoer, even though he shall have no connection whatever with him or the person wronged.

The law which prevents the detention of persons without trial is commonly known as the Habeas Corpus Act, which was passed in the thirty-first year of the reign of Charles II., and is entitled "An Act for better securing the liberty of the subject, and for prevention of imprisonment beyond the seas." It contains provisions by which no British subject can be long detained in prison except in such cases as the law requires him to be detained. Should a person be imprisoned without being informed of the cause of his imprisonment, application may be made in his behalf to the Lord Chancellor or any of the Judges at any time, no matter whether the Courts are sitting or not, for a writ of *habeas corpus*, returnable immediately; and this writ will require the person holding the prisoner in custody to take him before the Judge named in the writ as speedily as the distance will permit, which in no case could justify a delay of more than twenty days. When brought, the Judge shall determine whether the prisoner is properly detained; if not, he is bound to order his liberation. Another provision in the Act requires that every person committed for treason or felony shall, if he require it, be brought to trial at the next sitting of the Court which should try him; and, if acquitted, or not tried during the second sitting of that Court, he shall be discharged, unless it should be shown to the Court that time is required to bring the witnesses together. Another provision forbids the recommitment of a person for the same offence, when once delivered by a writ of *habeas corpus*, and very severe penalties are attached to any infringement or evasion of the law. An Act, passed in the reign of George III., extended the operation of the Act of Charles II., not only to cases of illegal detention by one subject of another, but to cases of illegal detention in which the Crown is specially concerned. Persons charged with smuggling, for instance, or impressed for service in the Navy, could apply for a writ of *habeas corpus* as against the Lords Commissioners of the Treasury in the one case, or the First Lord of the Admiralty in the other.

Of course, it is competent for Parliament at any time to put an end

to this law, and it has been the practice, in times of alleged danger, for Parliament to suspend the Habeas Corpus Act by giving authority to the Crown, for a limited period, to imprison suspected persons without giving any reason for so doing. Some think these times of alleged danger are the very periods when the Act is most necessary; because it is in times of tumult that men in authority are apt to confound the innocent with the guilty, if not to be despotic and cruel. The Habeas Corpus Act is designed for the protection of the innocent, and not to prevent the punishment of the guilty; therefore, it is at all times necessary for the protection of the subject, and never harmful to the State.

The liberty of the subject, then, is secured by the independence of the Judges, by trial by jury, by the power every subject has of enforcing the law, and by freedom from imprisonment, without speedy trial. The principle in our Constitution, however, which has most created the astonishment of foreigners in respect of the administration of justice, is the power the meanest subject has in this country of securing complete redress for any violation of the law, though committed by the chief representatives of the Sovereign. But cases are not uncommon in these days, in which persons of comparatively low degree are found suing, and suing successfully, Ministers of the Crown for the consequences of acts done in their capacity as representatives of the Sovereign. A case is recorded of the reign of Queen Anne, which illustrates at once the confidence with which men in this country appeal to the laws, the respect shown by the Sovereign to them, and the advantages we enjoy as compared with the condition of the inhabitants of other countries. The Russian Ambassador, in the year 1708, was arrested, when riding through the street, at the suit of a tradesman, for a debt of £50. The Czar of Russia, upon hearing of the occurrence, was greatly incensed at what he regarded as an affront, and demanded that the Sheriff of Middlesex, whose agent had made the arrest, and all others concerned in it, should be punished with instant death. "But the Queen, to the amazement of that despotic Court," says Judge Blackstone, who records the incident, "directed the Secretary of State to inform him that she could inflict no punishment upon any of the meanest of her subjects, unless warranted by the law of the land." It is necessary to add that, foreseeing trouble might arise out of such a state of the law, an Act of Parliament was afterwards passed, freeing from arrest all ambassadors in this country, and such of their servants as they may name to the Secretary of State. A copy of this Act, elegantly engrossed, was sent to the Czar by an Ambassador specially commissioned for the purpose.

Having described the leading principles of the Constitution, in respect of the administration of justice, it is necessary now to describe the titles and positions of those officers who administer justice, and the titles and jurisdiction of their several Courts.

ORIGIN AND FUNCTIONS OF THE COURTS.

Originally the Anglo-Saxon Kings administered justice in person, assisted by the Wittenagemote, or meeting of the wise, and they made progresses through the country for the purpose of deciding complaints, and reviewing decisions of their Thanes, which had been appealed from. William the Conqueror, however, although he did not alter the Constitution of the Great Council of the Anglo-Saxons, created an officer, with the title of Chief Justiciar, to preside in this Court, when dispensing justice, and from the fact that it always followed the person of the King, and was held in the hall of the King's palace, it came to be known as the Curia or Aula Regis, or Court of the King. This Court decided all cases whether complaints against persons for breaches of the King's peace, or appeals from inferior Courts, complaints relating to the payment of taxes into the King's Exchequer, and disputes between subject and subject, known as Common Pleas. William the Conqueror likewise discontinued the practice of going through the country, from time to time, to dispense justice, but, instead of this, he annually summoned his Great Council to sit at Easter, Whitsuntide, and Christmas, in three different parts of the kingdom, Winchester, Westminster, and Gloucester. This brought a great many suitors to Westminster, but to those who could not come, justice was denied. Accordingly Justices in Eyre were appointed to travel through the country with jurisdiction almost equal to that of the Aula Regis itself.

These itinerant Judges, however, did not complete their circuit in less than seven years, and some further change being deemed necessary, the whole system of administering justice was reorganised during the period between the reign of Edward I. and Edward III. The Aula Regis was abolished, and three separate Courts were established: the Court of King's Bench, which had the power of controlling all inferior tribunals throughout the country, and dealing with all crimes, misdemeanours, or breaches of the peace; the Court of Exchequer, which had to deal only with cases relating to the revenue; and the Court of Common Pleas, which was deputed to decide cases of disagreement between private persons. These Courts exist to the present day, and the same distinction exists between them, that is to say, although an action by one private person against another may, with certain exceptions, be brought in any of the three Courts, certain actions, such as those arising out of disputed ownership of land, must be brought in the Court of Common Pleas; actions relating to the revenue must be brought in the Court of Exchequer; and actions involving criminal charges, or in any way relating to breaches of the peace, must be brought in the Court of King's or Queen's Bench.

At about the same period was established the custom of certain of the

Judges making circuits through the country twice a year to administer justice, as the Anglo-Saxon Kings, and as the Justices in Eyre had done, but with greater regularity; and this system also is in operation to the present day. The circuits are fixed by Act of Parliament, and the Judges meet and determine each year which of them shall go upon this errand, and upon what day. They are then formally appointed for the purpose by Commissions from the Sovereign, which are issued from the Crown Office. The principal of these is called a Commission of Oyer and Terminer, which, in ancient French, means a Commission to "hear and determine." It is directed to the Lord Chancellor, several high officers of State, resident noblemen, and Magistrates, and two Judges, together with the King's or Queen's Council, and the Serjeants-at-Law who happen to attach themselves to certain circuits, and the Prothonotary or Associate of the Judge resident in the county; it authorises those commissioned to enquire into the truth of all charges of treason, felony, and misdemeanour committed within the several counties and places which constitute their circuits, and also to hear and determine the same on certain days, and at certain places, to be appointed by themselves. A second Commission of General Gaol Delivery is also directed to the Justices attending each circuit, the King's or Queen's Council, the Serjeants, and the Judges' Associates; it is in the nature of a letter from the Sovereign commanding those named in the Commission to deliver the gaol of the place named in the Commission of all prisoners confined in it; and it also informs them that the Sheriff of the County, who has control of the gaols, is commanded to bring the prisoners before them on a day to be named by the Commissioners themselves. The Judges going circuit have also, by statute, powers to try causes of difference between private persons, as well as to try prisoners, and when so acting, they are called Judges of *Nisi Prius*. The meaning of this description, "*Nisi Prius*," which, literally interpreted, means "unless before," is easy to be understood. Before the time when the practice of Judges going on circuit was thoroughly established, the Sheriff of the County where the cause arose, was commanded to bring the jury and witnesses to Westminster to try the action; but when the attendance of Judges in the country had become not uncommon, the writ to the Sheriff contained what is known as a clause of *Nisi Prius*, and ran:—

"We command you that you cause to come before our Justices at Westminster, on the morrow of All Souls, twelve lawful men who, &c., unless before (*nisi prius*) that day A. B. and C. D., our Justices assigned for that purpose, shall come to your county to take the assizes there." Until recently this form was still observed; but the Sheriff never had to bring his jury and witnesses to Westminster, because the day named in

the writ was always later than that fixed for the Judge to attend on circuit. The phrase "Nisi Prius" has now come to be used as a description of the causes tried by Judges under these circumstances. It will, however, suffice for the purpose of this work to distinguish only between civil and criminal cases.

There was yet another department of the *Aula Regis*, besides those referred to above, called the *Cancellaria*, in which were prepared the writs and precepts for conducting the business of the Court, and from which is derived our present Court of Chancery. It was presided over by the King's Chancellor, who, in those days, was of subordinate rank, although he sat with the other Judges in the *Aula Regis*. He was originally the King's chief Chaplain, or Secretary, and supervised all Royal grants and charters made by the Sovereign. The nature of his duties brought him much into personal communication with the King, and when the office of Chief Justiciar was put an end to, and the three Courts took the place of the *Aula Regis*, the *Cancellaria* still remained a part of the King's Court, and the Chancellor still remained near the person of the King. In time, he naturally became his recognised Prime Minister, and thus we have the origin of the political office of Lord Chancellor described in the chapter on "The Cabinet and the Government." The Court of Chancery arose out of the administrative duties of the Chancellor. Having to supervise and issue the Royal Charters, he became their interpreter, when the powers exercised under them were disputed, and thus he determined cases of private wrong. Petitions for the settlement of similar questions were also presented to Parliament, and these multiplied so largely that it was thought best to constitute the Chancellor head of a Court for the purpose of authoritatively deciding all such matters, and he does so to this day, without a jury, in accordance with well-established rules, which have gradually become moulded into what is known as Equity law, because the judgments were originally, and are still, based not so much on statutes as upon reason and natural right. The Court of Chancery is, for this reason, called a Court of Equity, and its jurisdiction an Equitable Jurisdiction. The Lord Chancellor is assisted in this work by the Master of the Rolls, who has a salary of £6,000 a year, and three Vice-Chancellors, whose salary is £5,000 a year each. The decisions of these Judges may be appealed from to the Lords Justices of Appeal, whose sole duty consists in considering such appeals, and from their decision a suitor may go to the Lord Chancellor and ultimately to the House of Lords, as the Supreme Court of Judicature in the Realm. The two Lords Justices receive each £6,000 a year. Should a question of fact arise in any of the Chancery Courts, it may now be decided by a jury in the same way as if it were tried in any of the other Courts.

The Judges of the Court of King's Bench, which claims to be superior to all others, consist of the Lord Chief Justice of England, at a salary of £8,000 a year, and five *puisne*, or lesser Judges, at salaries of £5,000 each, who, by virtue of their office, are Chief Conservators of the Peace and Supreme Coroners in the land. The Judges of the Court of Exchequer consist of the Lord Chief Baron of the Court, at a salary of £7,000, and five *puisne* Judges, also called Barons, because, it is believed, they were originally Lords of Parliament, at salaries of £5,000 a year each. The Court of Common Pleas consists of the Lord Chief Justice of Common Pleas, with a salary of £7,000, and five *puisne* Judges, at salaries of £5,000 each.

The Judges of these superior Courts, however, try only the most important cases. All the more trifling matters are disposed of as they arise in the County Courts, or by the Justices of the Peace, or Magistrates, and those associated with them, to dispense justice in the places where they reside.

There are other Judges appointed to preside over Courts constituted by Parliament in recent times for special purposes. The Judge of the Court of Probate, who is also the Judge for the settlement of matrimonial causes, is the most important of these; the Judge of the Court of Admiralty and the Court of Arches stands next. Their Courts are referred to under the heading "Special Courts."

Judges in the Superior Courts wear tippets of ermine over robes lined with crimson cloth, and the covering of their head is a threecornered hat, which they wear over a full bottomed wig on State occasions, and when passing sentence of death.

JUSTICES OF THE PEACE.

Throughout the country, in every city or town, and within easy reach of every village, may be found a representative of the Crown in the person of a resident Magistrate, or Justice of the Peace. Justices were first appointed in the reign of Edward III. His mother, Isabella, immediately upon his coming to the throne, sent writs to the different Sheriffs, stating that his accession had taken place with his father's consent, and commanding that the peace be kept on pain of disinheritance, and loss of life and limb. A few weeks afterwards, it was ordained that, for the better keeping of the peace in every county, good and lawful men should be assigned to keep the peace. They were accordingly appointed by the Crown, and are so to this day, except that the elected Mayor and Aldermen of the City of London and the Mayors of incorporated towns are also Magistrates, though not County Justices, by virtue of their office.

County Justices are now appointed by Commission, from among the most worthy gentlemen resident in the county in which they have

jurisdiction. Their powers, which are various and include the levying of rates for the maintenance of the highway, are all set forth in Acts of Parliament constituting them authorities in the matters they administer, but their most important duty is still the preservation of good order in their respective neighbourhoods and the dispensing of justice. For the latter purpose they sit at stated times to hear and decide complaints, to consider charges against persons brought up in the custody of the police, to commit them to prison in certain cases of small degree, or to await trial by a superior Court in graver cases. This superior Court may be the Court of Quarter Sessions held by the Justices themselves once every three months, or in still graver cases the prisoner may be committed for trial at the Assizes. But to ensure that on the one hand the Justices do not refuse justice where they have it in their power to grant it, and on the other do not exceed their powers and act with partial, corrupt, or malicious motive, suitors who feel they have cause may appeal against their decision to the Court of King's Bench, which exercises a general superintendence over all who administer the criminal law of the country. If they have right on their side the offending Justice will, in the one case, be compelled to do what he had before refused, and, in the other, if his motives be proved corrupt, he will be liable to fine and imprisonment, and removal from the Commission of the Peace.

Every meeting of the Court of Quarter Sessions is attended by the *Custos Rotulorum*, that Justice of the Peace who keeps the rolls of the local Courts. He is not bound, however, to attend in person, and may send a deputy.

The Magistrates of the larger towns usually have associated with them for the hearing of complaints Stipendiary Magistrates, who, as their name implies, are paid for their services; and also Recorders, who are appointed to preside at the Borough Sessions, and conduct trials in all respects as a Judge, except that all cases of difficulty—that is, all graver cases—are reserved for the Assizes. The Police Magistrates who sit daily in London and Westminster are Stipendiary Magistrates, but the Recorder of the City of London is an officer of some antiquity, appointed by the Lord Mayor and Court of Aldermen by prescriptive right. His title of Recorder arises from the fact that the first charter of Edward IV. to the City of London grants that the customs of the City be certified and “recorded” by word of mouth, and that the Mayor and Aldermen may declare by the Recorder what the custom is in disputed cases. Special provision is made for the County of Middlesex also, in lieu of Assizes, on account of the large number of cases arising in the City and its suburbs. The Central Criminal Court, consisting of the Lord Mayor, the Lord Chancellor, the Judges of the three Courts

at Westminster, the Judge in Bankruptcy, the Judge of the Court of Admiralty, the Dean of the Arches, the Aldermen, the Recorder, the Common Sergeant, who acts as Deputy Recorder, and the Judge of the Sheriffs' Courts, holds Sessions at least twelve times a year and tries all prisoners committed by the magistrates in London and Middlesex, and in certain parts of Essex, Kent, and Surrey. Prisoners charged with petty offences are dealt with by the County Justices.

The Justices are, in some cases, subject to the Lord Lieutenant of their county, an officer of great distinction, and generally a Peer, appointed to manage the militia of the county and all military matters therein. Lords Lieutenant nominate the officers of the militia, and present to the Sovereign the names of those fit to fill the office of Deputy Lieutenant; they also recommend who shall be appointed Justices of the Peace, but this forms no part of their duty, strictly speaking.

THE SHERIFFS.

The officer, however, who in his own person has most to do with the execution of the law in his county is the Sheriff. He is, in fact, the first man in the county during his year of office, and takes precedence there even of Peers of the Realm. He represents, too, an office of greater antiquity than any other, except that of the King. The duties of all other officers of the State have changed, or been entirely abolished, but the Sheriff is still the officer who levies fines due to the State and he is still a conservator of the peace, although he may not act as a Justice during his year of office.

In the earliest Saxon times of which we have any record, we read of the Shire-Reve, a title taken, in part, from the Saxon word *reafan*: to levy or seize. He then represented the lord of the district, within which he levied the lord's dues and performed some of his judicial functions. He does the same now for the King. He was sometimes appointed by the lord, but more often elected by the freeholders of the district. He is now appointed by the Sovereign, except in those cases which are regulated by special charter. The freemen of the City of London, for instance, still have the perpetual right to elect the Sheriff of Middlesex. The common method of appointment, however, is for the Lord Chancellor, the First Lord of the Treasury, and the Chancellor of the Exchequer, together with the Judges, to meet early in November, to consider who shall be appointed Sheriff in each county for the year. The Judges report the names of three fit persons in each county, obtained by them from the Sheriff holding office when they last visited the country as Judges of assize. The first of these is usually chosen, and the list so made is considered by the Cabinet early in the following year. If any

of those nominated desire to be excused from serving, the grounds of their excuse are examined, and the list finally determined on is submitted to the approval of the Sovereign, at a meeting of the Privy Council, when the ceremony of "pricking the Sheriffs" is gone through. The names being all written on sheets of vellum, the Sovereign pierces a hole through the parchment with a punch, opposite the name of the person appointed for each county; and this puncture denotes to whom the patents of office are to be issued.

A Sheriff derives his authority from two patents, one committing to him the custody of the county, and the other commanding the inhabitants to aid him. His duties are very numerous, and he has power to appoint an Under-Sheriff to help him; he is also obliged to have an agent in London. The county gaol is under his control; he has power to apprehend all wrong-doers; he summons the juries to try prisoners, receives and constantly attends the judges when they arrive in his county as Judges of Assize, carries out the sentence of the law, receives all fines due to the Crown, and renders account of them; he acts as returning officer in the election of Members to serve in Parliament, and therefore cannot himself represent his county in Parliament. During his year of office he presides in his own Court as a Judge, and decides certain small causes of disputed right. In times of riot, rebellion, or invasion, he has to defend the county, and with this object, may summon to his aid, all men within it over fifteen years of age. This assembly is called the *posse comitatus*, and to refuse obedience to the call of the Sheriff is an offence punishable by fine and imprisonment. The onerous character of the office, coupled with the fact that severe penalties are attached to any neglect or breach of its duties, causes some to shrink from undertaking it, but unless they can find a good excuse for refusing to serve they are fined heavily, and may be called on again and again. One, however, who has served, is not liable to be called on again, until after the lapse of three years, unless no other person can be found in the shire of sufficient substance for the office.

CANARY ISLANDS IMPORT DUTIES.—The Board of Trade have received a copy of a despatch from Her Majesty's Consul at Teneriffe, reporting that, by a Royal Order of the 4th ultimo, the sliding scale of duties hitherto levied upon cereals and flour introduced into the ports of the Canary Islands has been replaced by a fixed duty equal to that imposed on the importation of those articles into the ports of the Peninsula and Balearic Islands, as provided by Article 5 of the law of June 22, 1870.

THE EUPHRATES VALLEY RAILWAY.

Amongst the projects likely to affect merchants and shipowners is the re-opening of the old line of transit between the East and the West, by means of what is known as the Euphrates Valley Railway. This project was advocated for many years by the late Colonel Chesney, and certain recent proceedings of the Select Committee of the House of Commons, and the opinions expressed before them by highly competent witnesses, warrant the presumption that, in addition to the Suez Canal, another line of communication, connecting the Mediterranean with our Indian Empire, is no very remote contingency. The Committee have also possessed themselves of information derived from many of Her Majesty's Consuls formerly, or at present, residing in the localities under consideration, and the result of this evidence, both written and oral, is, that the necessity for some alternative route is felt and expressed with almost complete unanimity, and that the proposed route, or some other, will benefit the interests of England and India to an extent that is beyond all question. The Turkish Government, it appears, have a project in contemplation to extend one of their lines of railway from Scutari towards Bagdad, thereby connecting Constantinople and the Black Sea with the Valley of the Tigris, whence the line might hereafter be taken on to the Persian Gulf. The Russian system is also advancing in that direction, being nearly completed as far as Tiflis, and may shortly be expected to reach Reched, on the Russo-Persian frontier; and thus far the ground is at the present time unoccupied. Certain projects have been brought forward for establishing railway communication between Trebizond, or some other port on the Black Sea, and the head of the Persian Gulf; but these do not seem to be of sufficient direct value to English interests, or might almost be taken rather to further the views of Russia. The question has therefore been narrowed down to the best route to the Persian Gulf from some port on the Mediterranean, to which British ships could at all times have easy access, and which would be likely to be available, when needed, for the transmission of troops and mails, as well as passengers and goods, to India. The Committee are satisfied that no insuperable obstacle exists in the way of construction, and that more than one suitable port might be selected at either end of the line; that there are several practicable routes; that there would be no difficulty in procuring labour and materials for the purpose, nor any apprehension of its being exposed to injury by natives, either whilst in course of construction or hereafter. Of the various routes which have been discussed, the following appear to be the most important:—

- 1st. A line starting from Alexandretta (Scanderoon), or from Swedia,

near the mouth of the Orontes, passing through Aleppo to the Euphrates, at or near Jâber Castle, and thence carried down the right bank of the river to Grane (Koweit), on the western side of the Persian Gulf.

2nd. A line starting from one of the same points, crossing the Euphrates at Belis, passing down the left bank of the river, or the right bank of the Tigris, to a point nearly opposite Bagdad, re-crossing the Euphrates and proceeding to Grane.

3rd. A line starting as before, crossing the Euphrates at Bir, thence going round to Orfah and Diyarbekir, and following the right bank of the Tigris to Bagdad, whence it would follow route No. 2.

4th. A line somewhat like the last mentioned, but following the left instead of the right bank of the Tigris.

5th. A line starting from Tripoli, and proceeding across the desert, by way of Damascus and Palmyra, to the Euphrates, whence it might follow either of the Euphrates routes.

The arguments in favour of and against the Euphrates and the Tigris routes respectively may be thus stated. The Euphrates route is considerably the shorter, would be the cheaper to make : and, assuming an equal rate of speed, would afford the quicker passage for persons, troops, or mails passing between England and India. The Tigris route would attract the larger amount of traffic, and would connect itself better with the projected Turkish system. If the enterprise must be regarded simply as one affecting British interests it would seem the wisest course to adopt the shortest and most direct line, and that one of the two routes by way of the Euphrates should be preferred, leaving it for those who are interested in the improvement of the communications with towns on the Tigris, or further east, to connect those towns with the main line by means of branch railways, or the use of interior water communication. But if other considerations are to be taken into account, and if the co-operation of the Turkish Government has to be sought to any great extent, preference might be given to the route by way of the Tigris.

Almost an equal divergence of opinions exists respecting the merits of the various termini, the approaches by sea, the protection afforded to shipping, and the salubrity or otherwise, upon the land, but these points could be carefully investigated by a competent scientific commission for that special purpose. Several witnesses have discussed the relative advantages of the ports of Alexandretta, Swedia, or Tripoli, while on the Persian Gulf there have been not only questions between different ports, such as Bussorah, Mohammerah, Core Abdullah, Grane, and Bushire, but the further question whether the line should not be carried along the whole northern shore of the Gulf, so as to establish direct communication with the Indian railway system at Kurrachee.

With regard to another most important item, that of the cost, the Com-

mittee have not obtained full information, but it seems probable that the sum of £10,000,000 sterling would be amply sufficient to cover the expense of the shortest route. The prospective profits are not sufficient to induce private enterprise to enter upon the undertaking at the outset, therefore the consideration comes upon whose shoulder the cost should fall, and in answer to this question it is quite clear that three parties are interested in almost equal manner—namely, England, India and Turkey. What then, are the advantages that we ourselves, in this country, might expect to gain from this possible expenditure? They are principally those to be derived from the rapid transmission of mails, and from the possession of an alternative and more rapid route for the conveyance of troops; and from the great commercial advantages, both to India and England, which the opening up of the route would confer. The amount of time that might be saved in the transmission of mails from England to Bombay is variously estimated by different witnesses, some placing it at four days, others as high as seven or eight days; but this must, of course, materially depend upon, first, the length of the railway, and, secondly, the rate of speed at which the trains can travel, which again depends partly upon the gauge to be adopted, and thus the question is resolved into one of cost. Captain Tyler, R.E., who has gone carefully into the question, states the saving of distance by the Euphrates route from London *via* Brindisi and Scanderoon to Bombay, as compared with that *via* Brindisi, Alexandria, and Suez, at 723 miles, and estimates the saving of time at 92 hours. The adoption of Kurrachee as the point of debarkation instead of Bombay, would, of course, materially enhance the saving, and during the season of the monsoon the gain would be increased by avoiding the Indian Ocean.

The almost certain effects upon the commerce and the resuscitation of these provinces of Asiatic Turkey are pourtrayed by several witnesses. Mr. Giffard Palgrave, from his position as Consul at Trebizond, and for the southern coast of the Black Sea, is well able to speak, and he says that the country has been declining for many years, and he looks to the railroad mainly as the means of its revival. Owing to the want of communication at the present time, the quantity of corn, barley, and other cereals grown is only one-third, or even less, compared with what it is by the seaports of the coast. The growth of cotton which is now being much encouraged in the vicinity of the Euphrates, and necessarily taken at great expense up to the ports on the Black Sea, would be immediately brought into commerce. From the testimony of the merchants concerned in the trade, their great difficulty lies in the transport, which consists of the conveyance of merchandise so many miles upon the backs of camels and horses. Captain Jones, the political resident in the Persian Gulf, thinks that a railway would attract all the trade of

northern Persia, instead of being absorbed by Russia, as now, to the Black Sea, or to the shores of the Persian Gulf. Wherever we have had these international communications, as, for instance, at Bagdad, there has been great improvement. The main difficulty is now in getting that trade to the Mediterranean; and he considers that in a few years the development of these districts would ensure a very high state of civilisation,—or return of what may be seen in the ruined works as evidences that Mesopotamia was one of the most populous parts of the world,—which state would recoup the Government for any expenses to which they might be put. Mr. Rassam, who assisted Mr. Layard in his Assyrian researches, says that with regard to the commerce between England, India, Turkey, and other countries, it is well known that the trade is very important in the produce which is brought down from Koordistan, and also the wool and cotton from the plains. To his knowledge, at Mosul, twenty-five years ago, the indigo which was used there was nearly 500 per cent. more than it is now, and the same with respect to the other articles brought from India, as sugar, coffee, and spices. At present the trade in the mountainous country between Persia, Koordistan, and Mesopotamia, is generally carried upon horses and mules, but in the plains upon camels, and from Diyarbekir down to Bagdad on rafts. From Bagdad to the Mediterranean there are two ways of going. When the Arabs are subsidized, the caravans go through the deserted country of Mesopotamia and the desert of Syria. To show how important the trade is in that country, a merchant will send a load of dates from Bagdad to Aleppo or Damascus, a distance of about 500 miles, with the risk of losing his property, and then he brings in exchange Manchester goods, and sometimes iron and lead. Captain Jones, speaking from long experience, having been in the Persian Gulf in 1828, says that ships from all parts of India, particularly the old East Indiamen, used to come up to the Persian Gulf annually, deeply laden with very rich freights from various ports: they brought from India indigo, sugar, rice, and piece goods; in fact, all British commerce which used to come round by the Cape of Good Hope, and, especially, broad-cloth. At that time, we had the whole of the trade in that direction by the Persian Gulf, to the very confines of Russia; and even at Bussorah and Bushire some twenty large ships during the season, very richly laden, have been observed in those harbours; but that route was immediately closed by the abolition of the old East India Company's Charter; that was very detrimental to our trade with those countries, for it stopped the current upward towards Russia, and placed the whole of the trade almost in Russia's hands, for Russian trade then took the position of the British trade, and came back in a counter current from north to south. Again, more recently, in the case of the British Indian

Steam Navigation Company, if by the mere subsidising their line of steamers so much trade has been developed, the existence of a railway such as that contemplated, would marvellously develop the resources of those countries; so soon, in fact, as the railway is drawn from one station to another, almost the next day the trade and settlers might be expected to follow in the same direction.

We think, therefore, the Committee are more than justified in the views they have taken, and the shipping and commercial interests, both of this country and of India, will endorse their opinion, "That, even having regard to the two routes, by the Red Sea and the Persian Gulf, both might be maintained and used simultaneously: that at certain seasons, and for certain purposes, the advantage would lie with the one, and at other seasons and for other purposes, it would lie with the other. That it may fairly be expected that in process of time traffic enough for the support of both would develop itself, but that this result must not be expected too soon. That the political and commercial advantages of establishing a second route would at any time be considerable, and might, under possible circumstances, be exceedingly great; and that it would be worth the while of the British Government to make an effort to secure them, considering the moderate pecuniary risk which they would incur."

CAST-IRON VERSUS COPPER.

THE Board of Trade recently, through its surveyors, caused considerable excitement on the question of copper *versus* cast-iron in steam boiler fittings and in steam pipes. Some think that the cheapness of cast-iron is the only thought of the manufacturers; whilst some manufacturers believe that the Board's advisers have never gone further into the merits of the case; and that their whole reasoning on it has been that cast-iron pipes, being only about one-fourth the price of copper pipes, must therefore be worthless: in short, that whatever is low priced must have little value. We do not say this of the Board's advisers; we merely repeat what manufacturers have said to us on the Board's action. The construction put on that action by manufacturers shows that the actions of surveyors may often be ill-judged. We believe that the Board of Trade surveyors have never objected to cast-iron as cast-iron, although doubtless the condemning of cast-iron, in certain cases, has led to the belief that the material itself is under a ban. Whatever may have been the object with which cast-iron has been objected to in certain cases, and although that object may have been perfectly legitimate, still an im-

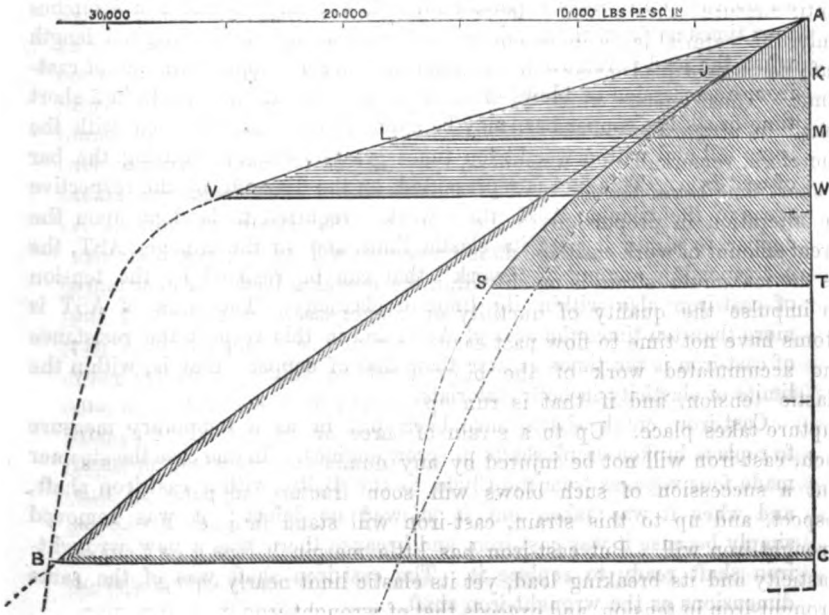
portant question has been raised which has assumed the shape of "Cast-iron *versus* Copper." We, therefore, think that the following remarks will not be out of place:—

These materials of construction have, each one, an elastic limit, up to which amount they may be loaded without producing a permanent set or alteration in form. Up to that limit the action of the molecules of the substance under variations of load, is the same as that of a spiral spring: the extensions and the compressions are, in their range, exactly proportional to the loads applied, and when the load is removed it returns to its original state. In this action the atoms of the substance have not changed their position, their molecular arrangement is unaltered. But, if the load be increased beyond this limit, the spiral spring would not return to its original length; it would be strained and injured. Beyond this limit the molecules of any material begin to shift past each other, a flow of solids begins, and so long as this load is applied the motion is continued until rupture takes place. Beyond this, rupture is a question of time only, the material is, in its atoms, in constant although slow motion. The safe permanent load for any material must always be within the elastic limit. Those metals which have great ductility have the elastic limit small in proportion to the ultimate resistance to rupture. They are, therefore, remarkable for toughness, they may be frequently strained for a short time beyond their limit of elasticity, and their form will suffer an alteration in proportion to the time that that strain was borne. A great amount of work has to be done upon such a body to break it so long as the maximum strain is much within the breaking load. In resistance to impulse the quality of ductility or toughness is of no value; the atoms have not time to flow past each other and re-arrange themselves; the accumulated work of the blow must be taken up *instantly* by elastic tension, and if that is run up thereby to the breaking strain, rupture takes place. Up to a strain of three or four tons per square inch, cast-iron will not be injured by any number of repeated impulses. But a succession of such blows will soon fracture copper. In this respect, and up to this strain, cast-iron will stand fatigue as well as wrought-iron will. But cast-iron has little margin between its limit of elasticity and its breaking load, yet its elastic limit nearly equals that of wrought-iron in tension, and exceeds that of wrought-iron in compression. Mr. Mallett, in his treatise "On the Construction of Artillery," says: "Habit, and an un instructed mode of viewing such questions, have produced the prevalent notion of the *brittleness* of *cast-iron* as contradistinguished from the *toughness* of *wrought-iron*. The fact is, cast-iron, within the range of four or five tons tension per square inch, is a much more ductile material than wrought-iron; its total extension per unit of section is far greater, and the 'work done' in producing the extension

for the first few tons (up, in fact, to the very limited strain, about seven tons, at which rupture occurs) is much greater than in wrought-iron; and were it not that the ultimate safe strain upon wrought-iron is so much higher, cast-iron would be the better material for ordnance."

Mr. Mallet then gives a diagram showing extension of wrought-iron and of cast-iron under strain. But, unfortunately, that diagram and the table which follows it are both very far wrong. In copying in Hodgkinson's experiments he has given what really is the extension of a cast-iron bar 10 ft. long as the extension of a bar 1 in. long, or 120 times more than it ought to be.

We give a diagram in a more complete form, and, as we believe, correct, representing the general features in the action, within the elastic limits, of copper K, soft wrought-iron M, strong wrought-iron W, cast-iron under tension T, and cast-iron under compression C.



The elastic limit of sheet copper is 4,400 lbs. per square inch. By that load a bar of copper 1000 inches in length will be extended one-third of one inch = AK on the diagram. The strain 4,400 lbs. is represented by the line JK, scale $\frac{1}{3}$ in. = 1000 lbs. The "work done" upon this extension is represented by the area of the triangle AKJ, $\frac{.82 \times 4400}{2} = 704$ inch pounds, or $58\frac{2}{3}$ foot pounds. A weight $58\frac{2}{3}$

pounds falling one foot will extend a bar of copper of 1000 inches in length and one square inch in section, to its limit of elasticity. It is evident from the construction of the diagram that each square inch of the area of the diagram represents $\frac{8000}{12} = 666$ foot pounds.

Soft wrought-iron has its limit of elasticity at 17,000 lbs. = LM. A bar 1000 inches long, and one inch square, stretches the amount AM = $\frac{1}{8}$ inch, and the "work done" upon it is the area of the triangle AML, very much larger than the corresponding area for copper. Stronger and less ductile wrought-iron has its limit of elasticity at W, the load is VW = 25,700 lbs. per square inch, and the 1000-inch bar is by that stretched an amount equal to AW, or $\frac{1}{3}$ ths of one inch.

We now come to average cast-iron; the limit of elasticity for tension is at T, strain ST = 13,500 lbs. per square inch, stretching the 1000-inch bar 1.4 inches. The 1000-inch bar of copper stretches only one-third of an inch before it takes a permanent set, but that of cast-iron stretches four times as far without injury, returning always to its original length when the load is removed. Comparing a bar of copper with one of cast-iron, a succession of blows from a falling weight that would in a short time break the copper bar, may be applied to the cast-iron bar with the same fall and with a weight ten times greater, without injuring the bar of cast-iron. This fact is represented, on the diagram, by the respective areas of the triangle AJK, the "work" required to be done upon the copper to strain it past its elastic limit, and of the triangle AST, the corresponding amount of "work" that can be resisted by the tension of cast-iron also within its limit of elasticity. The area of AST is more than ten times the area of AJK, and in this respect the resistance of cast-iron is ten times greater than that of copper—that is, within the limits of elasticity in both materials.

Cast-iron crank shafts have been put in as a temporary measure to replace broken crank shafts in screw engines. In one case the steamer made four voyages from the Clyde to the Baltic with a cast-iron shaft, and when it was taken out it showed no defect; it was removed simply because it was cast-iron, and because there was a new wrought-iron shaft ready to replace it. The cast-iron shaft was of the same dimensions as the wrought-iron shaft.

"In the experiments made by Mr. Hodgkinson for the Royal Commission on iron structures, it was ascertained that no cast-iron bar would sustain, without fracture, 4000 blows, each causing a deflection of one-half the ultimate deflection due to rupture from dead weight; but no bar was broken by 4000 blows, each producing a deflection of one-third this ultimate deflection, the blow in every case being made with a moderate velocity." A copper bar of the same dimensions, of hammered copper,

would not have stood 1000 of the same blows without rupture. The resistance to transverse breaking of cast-iron is above 30,000 lbs. per square inch, and under these deflections the strain produced must have reached 10,000 lbs. per square inch under each blow, and no bar broke with only 4000 blows. The resistance to impulse within the limit of elasticity of cast-iron is shown on the diagram to be only a little less than the same resistance for the strongest wrought-iron ALM, and considerably greater than that of very ductile wrought-iron AVW, and more than ten times that of copper plates AJK. But cast-iron in steam pipes and fittings, when considered in reference to its liability to rupture from jerking, pitching, rolling, is subjected to strains of compression as well as to those of tension merely, and in resisting transverse forces, both kinds of strain come into play. The compression limit of elasticity of cast-iron is very high, BC = 32,000 lbs. per square inch, and the 1000-inch bar is thereby shortened $3\frac{7}{8}$ inches. This limit, 32,000 lbs., corresponds very nearly with the *breaking* strain of copper plates. In compression, copper would not *break* at this strain, but it would not *carry* the load, it would yield and alter in form, and if after being subjected for some time to this strain the structure were suddenly to return to its original dimensions, fracture would be produced. But cast-iron can recover itself after being for some time subject to this amount of compression strain, and, its *breaking* load under compression, is more than the double of this.

In the diagram, the part of each curve of strains, that is contained within the limit of elasticity, is drawn a full line, and the area within it is shaded. The triangles are supposed to overlap each other, and all start from the point A and the straight line AC. The extensions are drawn full size, and one inch is marked by one dot, two inches by two dots, &c. The one inch extension is one inch extension on a bar 1000 inches long, and may therefore be also read as the $\frac{1}{1000}$ th part of the length of any bar; but it is only for the 1000-inch bar that the extensions are full-size; for a bar only 100 inches long the extensions shown will be ten times the actual amount, but the strains will be the same as with the long bar. The areas of the triangles will also be less as the bar is less; for the 100 inch bar the triangles will have one-tenth of the areas of those for 1000-inch bar, and so on.

The part of the curve that lies beyond the limit of elasticity, is made a dotted line. There is no fixed form for this part of the curve, its curvature and steepness depend upon the measure of time during which the strain is applied, as well as upon the amount of the load. The dotted line for wrought-iron as far as B, is taken from one of Hodgkinson's experiments, the others are put in as what they might probably be; but with this remark, that the curve, from the termination of the portion

referring to strains within the elastic limit, up to the breaking point, may have any direction between the horizontal and the continuation in a straight line of the first part of the curve. If the strain is a sudden impulse as the effect of a blow, the curve for copper may run up the same line as for cast-iron tension, or it may be even more steep in continuation of the straight line AJ. But if the strains be produced by increasing permanent loads but little above the elastic limit, the curve will be nearly horizontal, and the material will stretch a great deal before it breaks.

Mr. Mallet speaks of the great "ductility" of cast-iron within the elastic limit as compared with the same quality in wrought-iron: but the word ductility is wrong, applied in this case. Ductility should refer only to that stretching which produces a permanent alteration in form. Putty is ductile, india-rubber is not ductile. Within the limit of elasticity the extensibility of metals corresponds to that of india-rubber; beyond that limit their yielding corresponds to that of putty, and it is only then that their *ductility* comes into play. The rate of elastic extension of cast-iron is greater, nearly twice the amount of that of wrought-iron; but the *ductility* of cast-iron is almost nil.

The breaking strains of the metals described in the diagram are: K, copper, 82,000; M, ductile wrought-iron, 50,000; W, strong wrought-iron, 60,000; T, cast-iron under tension, 16,500; C, cast-iron under compression, 110,000.

If, for the purposes of marine engineering, it is not the quality of ductility that is wanted, that will enable the steam-pipes or fittings easily to alter their shape under strain, but if what is wanted is the property of resisting strains and of storing up in their springyness an amount of antagonistic work that would otherwise be detrimental, cast-iron has this in an eminent degree. That it always recovers its original form after even a high strain is, to the engineer, a property of no slight importance. Cast-iron has not the great strength of wrought-iron nor the ductility possessed by both wrought-iron and copper, but its properties in general as they have been described, and the facility with which it can be cast into any form, and its moderate cost, lead its admirers to give it a pre-eminence in the quality of serviceability which should, so they think, at least procure for it a favourable consideration in technical legislation in a country of engineers such as this is.

No one can defend the use of cast-iron for every purpose; many persons would properly object to its use in marine boilers wherever it would be exposed to direct impact of the flames of combustion. But after the products of combustion have passed through the tubes of a marine boiler, some persons think that the temperature is such that cast-iron steam pipes in the uptake will not be injured by the heat.

As bearing upon this point, we quote again from Mr. Mallet: "Baudrimont has ascertained that the relative cohesive powers of copper and of iron at the three temperatures, 32°, 212°, and 892° F, are in the ratios of the following numbers, which, as respects both, agree pretty well with the results of the experiments of the Franklin Institute:—

	Temperature.		
	32°	212°	892° F.
Copper	25,888	22,050	19,889
Iron	205,405	191,725	210,270

"If, therefore, gun-metal and cast-iron follow the same law, as it can scarcely be doubted they do, a gun-metal gun, heated from the freezing-point of water to 892° F, loses resisting power in the ratio of about 20:25 $\frac{1}{3}$, while a cast-iron gun gains resisting power in the ratio of about 21 to 20 $\frac{1}{2}$, having, however, a weak point at 212°, where its resistance diminished to nearly 19, a fact which indicates that cast-iron guns are safer *in this respect*, when strongly heated, than when heated less." The advantage is on the side of the cast-iron, even when it has reached its "weak point," for copper has at 212° fallen from 20 to 16 $\frac{1}{2}$, while iron has fallen from 20 to 19 only. Similar experiments carried to 600° F show that iron has then its maximum strength, and that copper has at that temperature lost one-third of its original cohesive power. The temperature of the products of combustion, after they have passed through the tubes or flues of a marine boiler, is about 600°.

All structures exposed to great changes of temperature are liable to be strained by the expansion of the material; especially is this true of steam-pipes, and it is important that their arrangement shall be such as will allow expansion to take place, without producing undue stress upon any part. But in comparing the properties of copper with those of cast-iron, in this respect, we find that a bar of copper, 1,000 inches in length, expands 1.8 inches, when heated from 32° to 212°, while a similar bar of cast-iron will expand only 1.1 inch. For every degree of rise in temperature, copper expands 10 in 1,000,000 of length, and cast-iron expands 6 in 1,000,000 of length. Again, boilers are made of wrought-iron, and the expansion of wrought-iron is almost the same as that of cast-iron, and there is, therefore, not the same risk of unequal expansion where these two metals are combined in one structure, that there is when copper and iron are tied together.

THE NEW MERCANTILE MARINE OFFICES FOR LONDON.

It had long been apparent that the Mercantile Marine Office arrangements for the Port of London, with the engaging and discharging business partly at Hammet Street and partly at Dock Street, and the Examiners and Surveyors at East India Avenue, were not what they should be, or suited to the important and growing trade. Still, so many questions had to be considered to make any change as beneficial as was wished, that delay was inevitable. When, however, the premises at St. Katharine Dock House came into the market, it was at once seen that an opportunity for doing something had opened, and we learn that the development of the scheme then designed has realized in every way the expectations of its designers. Not only have improvements been effected in the Mercantile Marine Office itself, but this establishment has been brought under one roof with the Local Marine Board, the Examiners and the Surveyors of Steamships, whilst provision has been made for the reception of the Surveyors of Tonnage, and the Emigration Officers transferred to the Board of Trade under the Act of Parliament of last session.

The portions of the Dock House which have been taken consist of the first floor, and part of the basement on a level with the dock quays. The Mercantile Marine Office proper is approached from Upper East Smithfield, opposite to the Mint, by a set of broad steps leading to an open space or court, having on the left hand large waiting rooms for seamen to be engaged or discharged, for ships' officers, and for the out-door staff; on the right hand Engagement and Discharge Offices, in each of which five crews can be dealt with at a time. There are also capital offices for the Superintendent, the Cashier, and the rest of the establishment. Immediately at foot of the steps is an "Inquiry Office," communicating through apertures in the wall, with the Superintendent on the one side, and the Cashier's Department on the other. This room is fitted with writing necessaries to enable candidates for examination, applicants for surveys of vessels and others to fill up on the spot the requisite forms, so that the application may be lodged and the fee paid at one operation. A separate entrance is provided for women, who are thus able to transact business with the bank without passing amongst the seamen. In a similar manner there is communication between the Discharge and the Cash Offices, to afford seamen paid off in the former the opportunity of investing in the Savings Bank or procuring money-orders without quitting the room. In the Engagement and Discharge Offices the counters have been divided into "blocks;" and a master or seaman made aware of the "block" at which he is to attend, can have no diffi-

culty, even if the room be crowded, in finding his way unaided to the spot where the business which concerns him is going on. Shipowners, masters, brokers, and the office staff have no need to pass through the premises allocated to the seamen, but have access to the several offices through the main entrance.

In the upstairs offices there are a board-room of excellent proportions, well suited for the investigations occasionally held by the Local Marine Board; a Navigation Examination Room, which has been fitted up for nearly sixty candidates, each having a separate table and chair with sufficient space for an officer to walk round without interrupting him in his work, whilst the Examiner is placed at an elevation which gives him complete control at one glance over the whole room; and also rooms for the Examiners in Seamanship, for the Surveyor-General and Surveyors of Steamships, the Examiners in Steam and Engineering, and for the Surveyors of Tonnage and the Emigration Officers.

The arrangements have been carried out under the superintendence of a committee consisting of members of the London Local Marine Board and officers of the Board of Trade.

RIVALRY IN OCEAN STEAMING.

It is well known that many, if not all, of the great companies running steamers on the Atlantic profess to discountenance, and even to forbid, the practice of "racing;" but when two steamers of about equal speed happen to start alongside of each other from Liverpool or New York, the professions of their owners seem to be uniformly disregarded by the commanders in the struggle which follows, and which, to say the truth, it is in many cases impossible for human nature to resist. Liverpool is very seldom without a slight degree of excitement regarding the passages of the New York steamers; and, latterly, the appearance of a novel fleet, designated "the White Star Line," has given the "flags" more than usual scope for speculation and resulted in an exchange of "hats," and a laying of odds, which may have the effect of bringing bookmakers upon the scene.

Until recently the Cunard Company with the *Scotia* held almost undisputed possession of the blue ribbon of the Atlantic, and the screw steamers of other lines were absolutely nowhere in comparison. However, the opportunities afforded by the advances of marine engineering were soon embraced by other steamship owners, and Mr. Inman, with the *City of Paris*, succeeded in establishing a high reputation for

speed. Then came the Cunard steamer *Russia* and the Inman *City of Brussels*, which on one occasion sailed together from New York, and arrived almost together in Liverpool, both calling at Queenstown as usual.

The White Star fleet were started last year, and the glove was thrown down to the Inman Line by their choosing the "days" of the latter to sail from Liverpool and New York. This has, of course, caused many spirited contests, and, in some cases, we understand that the older Inman steamers have had to yield to their newer rivals; but the *City of Brussels*, their crack ship, has maintained her superiority throughout, and on her last voyage home arrived several hours before the *Republic*, one of the White Star steamers, which is now destined to give an opportunity for speculation over new ground.

It appears from advertisements that the *Republic* is to make her next voyage to Valparaiso and Callao, on the now well-known route of the Pacific Company, whose fine fleet of vessels on that line have enjoyed a monopoly, which, if we may judge from their performances, and the enterprise displayed throughout, has not been undeserved. However, this monopoly is now challenged by the vessel we have named, and the Pacific Company's advertisement shows that they are not afraid to take up the gauntlet. They have announced that the *Tacora*, one of the latest additions to their fleet, which has attained remarkable results on trial, will sail from Liverpool on the 4th October, and as the *Republic* is to sail on the day following, there is every prospect of a race to Callao, a distance of 11,000 miles. This is beyond question the greatest "sensation" of the kind that even Liverpool has experienced, and we can easily imagine that the quidnuncs of the "Flags" and the steamshipping world are busily speculating on the probable performances of the rival vessels. For ourselves, as we have no column for "Sporting Intelligence," we cannot give "quotations" for this "event," but the race—if there should be a race, which may be denied as usual—promises to be very interesting as a sample of what can be done by modern steamships on a voyage which will undoubtedly subject their powers to a severe test. It is understood that the *Tacora* and the *Republic* will call at the same ports, and we believe they are intended to run from Lisbon to Rio de Janeiro, a distance of about 4,800 miles, without stoppage.

It may interest our readers to know that the *Tacora* is a vessel built on the Clyde by Messrs. John Elder & Co., and that the *Republic* is one of the latest additions to the Oceanic fleet by Messrs. Harland and Wolff, of Belfast. Both vessels are fitted with engines on the compound principle.

THE FISHERIES OF ICELAND.

COMPRISING an area of about 29,440 square miles, the island of Iceland presents an unexplored and uninhabitable interior, its coasts only being sparsely peopled by a population not exceeding 69,700 souls. Walled-in by the drift ice, which, coming down with the Polar current, renders the north coast all but inaccessible at certain periods—indeed, three times during the present century the island itself has been completely enclosed—the inhabitants stand, of necessity, much aloof from other nations. So little, in fact, have they mixed with foreigners, that, in 1864, there were but 113 persons among them who were not born Icelanders. The island has neither forests, mines, nor coal. Cereals are not grown, and the first necessaries of life are imported. Its wealth consists in its wild pasturage, and in the rich fisheries of its coasts.

In the present day, the whale, the shark, and the cod fishery chiefly engage attention. Nevertheless, the herring, the halibut, the haddock, shell-fish of all kinds, and especially the mussel (said to be so common that its shell might afford lime to the whole country), are plentiful in the surrounding seas; while, in the fjords and rivers, trout, salmon, and eels abound. Seals also exist in great numbers. The cod fishery is carried on chiefly on the west, the shark fishery on the north of the island, and the salmon is found in the rivers near Reykjavik, the capital.

“The whale fishery,” says Mr. Consul Crowe, from whose valuable reports for 1865-6 and 1870-1 we collect the substance of the present paper, “which in former times was carried on to a considerable extent all round the island, ceased towards the middle of the last century, probably because newer and better stocked fishing grounds were discovered. The long period of repose these marine monsters have enjoyed, appears to have caused them to increase abundantly; and on sailing round the island one is struck by the large numbers of whales seen tossing themselves about in the undisturbed possession of the waters in all directions, and the thought involuntarily occurs that they might be turned to some profitable account. The natives state that there are not less than eleven different kinds or species of the *Balænus* inhabiting the iceland waters. Of these, however, I suspect that many are of the *Dolphinus* class. The following are the names of the four kinds at present known to the natives, and formerly fished round the island:—

“*Balæna mysticetus*, or Greenland whale, found on the north coast.

“*Balæna boops*, or long-finned whale, containing the best and largest quantity of oil.

“*Balæna physalus*, or herring whale, containing less blubber than the preceding ones.

"*Balæna rostrata*, the smallest of the four, and found frequently far up in the firths or fjords of the island, where in former times they were captured in large numbers, especially on the north-west coast."

About ten years ago an enterprising American re-commenced the whale fishery, and, with his four brothers, established himself at Scydisfjord, on the east coast. At first he fished from a small sailing vessel, but afterwards employed a screw steamer of about 40 tons burden, with a whaling boat in tow, and his method appears to be so peculiar that we quote at length Mr. Crowe's description of it in the Report of 1865-6.

"The whale is struck by means of a harpoon, shot from a sort of rocket apparatus; the handle or stock is charged with some detonating compound, which explodes as the weapon enters the fish; the explosive force is sufficient to shiver the harpoon in pieces in the creatures inside, and send the splinters to all parts of its body.

"This destructive missile is the American's own invention, and has been patented by him, and it is stated to have the advantage of killing the whale almost instantly; and, by causing the generation of gas in its inside, prevents the sinking of the carcase. How far experience justifies these statements, I am unable to say. He had, it appears, counted upon being able to approach the whales in his steamer near enough to take aim; but they invariably avoid it; and it has been found necessary to shoot them from the boat. In consequence of this failure, he has decided upon procuring a larger steamer, capable of hoisting two boats alongside, and of keeping the sea a longer time than the present one will allow of.

"When the whale is killed, a rope is fastened to the harpoon, and it is towed to land; if it sinks on the road, the rope, which is a very long one, is marked with a buoy bearing the owner's name, and it is later searched for, hauled up, and landed. If it is washed on shore, the owner's mark, according to the law of the island, gives him the right of proprietorship, after deduction of strand dues. The carcase is cut up on the island, and the blubber and bones at once crushed and boiled down for the oil; the belly, which contains no blubber, is sold to the natives for food under the name of 'kenge,' and finds a good sale; the whalebones are sent to England, where they appear to be used for making Prussian blue; and the American has a project for pressing the flesh and shipping it to England for feeding dogs and pigs. The Iceland whales give generally from 50 to 100 barrels of oil each, and, when tolerably successful, this fishery is a very lucrative one."

The Icelanders take no active part in the whale fishery, but devote themselves as a rule to that of the shark and cod. They fish principally from light open boats, with projecting prows, and carrying only one small lug-sail. Row-boats are preferred on account of the number of hands required. The Icelandic fishermen are

described as possessing a power of endurance, an ability to keep the sea in all weathers, and a courage above all praise; they scorn to take provisions of any kind to sea, though they never neglect to carry their snuff-horns. It is greatly to be deplored that these hardy mariners are so careless both as to their personal comforts and as to the seaworthiness of their craft, since to these faults may doubtless be traced the fact that 40 per cent. of the deaths of the men are caused by drowning.

The shark, which is indigenous to the Icelandic and Norwegian coasts, though seldom taken in the Cattegat, is the *Scymnus microcephalus*. To the natives, it is known as the "nakarla," or "havkalen." It averages from 10 to 20 feet in length, and lives on seals and fish, daring, in its more voracious moods to attack the whale itself, but seldom molesting man unless disturbed by him. It is taken with comparative ease, as, owing to its dimness of sight, caused probably by the *Lernæopoda elongata*, a small parasite which adheres to, and sometimes entirely covers its eye, it seizes the bait—young seal blubber, or smoked horse-flesh soaked in blood, to which it is evidently attracted by the sense of smell—without attempting to escape the weapons of its captors. The shark is caught near land during the month of April; but, during the summer months, it is found in as much as 200 fathoms of water, from 80 to 160 fathoms from land, and generally off the western side of the island.

"Of late years the craft used on the north side of the island are decked vessels of 35 to 40 tons, provided with oars, and so lightly constructed that in calm weather they can easily get clear of the ice, and move from place to place. When a vessel is in search of sharks, it is anchored at a place where they are presumed to be—in preference, near the rising edge of a bank. The anchor used is generally a four-pronged iron grapple, weighing about 180 lbs., with 15 to 20 fathoms $\frac{1}{8}$ -inch iron chain cable, and a 350 fathom long hawser. When anchored, the fishing commences. If nothing is caught, the position is shifted until the shark is found; and if the take is good, the vessel remains at the spot, and rides out the storm, if necessary.

"The lines used are of the thickness of deep-sea log lines, fastened to 8 fathoms of chain, in the middle of which a leaden weight of 10 to 13 lbs. is fixed. Under this a strong 6-inch hook is fastened; the entire hook is covered with bait, and it is notched inside the bend to prevent the latter slipping down.

"When the shark is hauled up to the surface, it is killed by means of a long spear. A harpoon is then fixed in it, and the rope made fast to the ship's side; after which the carcase is ripped up by a knife affixed to a hole, and the liver is taken out and placed in barrels, and stowed away in the hold."

“The value of a carcass on shore is about 7s. 6d. The flesh is sold to the peasants, who bury it in the ground for two or three weeks, and then disinter it, wash it, and cut it up into strips and hang it in the drying-house. After one year's drying it is considered fit for food. The flesh has then assumed a clear, reddish, yellow colour, which gives it something of the appearance of salmon, so far as the eye is concerned, but certainly not the nose, for its presence in a room is very perceptible.” How perceptible it must be in the case of ten-year old shark flesh, which we are further informed is accounted a delicacy among native connoisseurs, we must leave to the imagination and olfactory nerves of our readers to conjecture.

The gall of the shark is used instead of soap. The skin is also turned to good account; after being stretched on the ground and dried, it is used as shoe leather, though it is not susceptible of being polished. A shark of moderate size yields two-thirds of a barrel of oil (reckoning a barrel at about 140 quarts), which is extracted by boiling the liver. A first boiling gives the light train^ooil; a second, the darker or common oil. Three barrels of liver give about two barrels of oil, and, in calm weather, one small open boat, if fortunate, may secure about 15 barrels of liver in a couple of days. In Sweden and Germany, where train oil is much used in tanneries, it fetches from 55s. to 125s. per barrel. The Norwegians, it would appear, are the only foreigners who have engaged in the Icelandic shark fishery, and Mr. Crowe holds out much encouragement to any British adventurers who may feel disposed to try their fortune in this direction.

As early as 1292 dried cod was, presumably, an article of trade in Iceland, for a record exists forbidding its sale to foreigners for fear of an expected famine. The cod-fishery of to-day seems to be boundlessly plentiful, so much so, that a single six-oared Danish ship's boat has often returned home with 20,000 cod caught while detained off Iceland. In the south and west districts of Iceland the natives fish and export cod to a large extent, but on the north and east sides of the island, where the inhabitants are occupied in sheep-breeding, the fishery only supplies the home demand.

The large cod remain near the island during the winter, approaching with the spring, the long flat coast stretching from Vestmann's Islands to Vesterhorn, which is admirably adapted for spawning. The earliest and best fishings begin here in February and March, and commence later in the north. In Faxebay cod is found in May, and in Breida Bay as late as June.

“The method of capturing the fish is either by small drift nets, deep-sea or hand lines, and the ordinary long lines. Fishing by nets is only carried on in the south part of Faxebay between Skagen and Havnefjord,

where the nets are sunk, as the fish in these parts generally keep close to the bottom ; the fish taken by net are different from those caught on the line, being more squat and plump with smaller heads. Fishing with the drift net generally ceases about the middle of April. . . .

“The hooks used are the same as the French ones, excepting in Breida Bay, where the men still use the old Icelandic hook which is 20 inches long and $2\frac{1}{2}$ lines broad.

“Fishing with the ordinary lines is carried on when the two other methods are no longer productive, and takes place all round the island. From 1 to 4 lengths of a strong thick line, each length measuring 60 fathoms, are spliced together, and vertical or hanging lines 6 feet in length are spliced into this at a distance of from 6 to 9 feet apart, and a hook baited with snails or mussels is fastened to the end of each hanging line ; the hooks used are the ordinary tinned ones (No. 5). A boat carries from 20 to forty such lines, which are sunk to the bottom by means of stone weights, and their position is indicated by buoy ropes kept up by small floating barrels marked with the owner's name. They are placed across the entrance to the bays and rivers, or sometimes at the outside of them, and are taken up twice or thrice a day, according as weather permits. As many as 80 of these long line boats may sometimes be seen collected together, busy fishing from 3 to 4 miles off shore.”

The mode of curing cod is by letting it remain three or four days in salt and then drying it. All the salt used for this purpose is imported, and a salt-work, established at Isefjord during the last century, was eventually closed as a failure. The high temperature of many of the springs in the island, among which are the far-famed Geysers, affords every facility for evaporation, and is to be regretted that an attempt is not made to utilize them.

The seal is classed by the Icelander in three divisions—the land-seal, which breeds near the shore in spring ; the open-sea seal, which breeds near the more distant rocks and reefs, and the Greenland seal, found in winter near the fjords. It is usually hunted with the harpoon ; a net, however, is frequently employed for the capture of the land or shore-seal. The Icelanders eat the flesh, and an excellent oil (we need scarcely say) is obtained from the blubber. These fisheries are most sedulously protected ; no guns are fired in their vicinity ; the young seals are never killed until they are full grown, and the greatest care is taken to preserve the females.

During the present year, a law of some importance to foreigners engaged in the Iceland fisheries has been passed. By the old law of 1787, which regulated the Iceland deep-sea fisheries, the marine territory of the island was defined as extending nearly 20 English miles from the shore, and its other provisions and penalties were of so arbi-

trary a character that they had long been practically inoperative. The new law annuls much of this objectionable statute, and acknowledges maritime territorial limits as accepted by international agreement. Further more, by payment of a moderate contribution to the poor-box of the locality, such objects as are necessary for the fisherman's trade may be landed and warehoused. To those engaged in the whale fishery this latter concession is of great value, as now, under certain restrictions, they may land their catch.

The following table shows an average year's export of fish, roe, and oil, and distinguishes the amounts produced in the different Amts, or provinces of Iceland :—

	South Amt.	West Amt.	North and East Amts.	Whole Island.	
	Value.	Value.	Value.	Quantities.	Value.
	Rds.	Rds.	Rds.		Rds.
Salt fish	215,229	87,171	609	5,078,898 lbs.	303,009
Dried ditto	12,120	5,370	720	213,664 "	18,210
Salt roe	5,910	30	...	1,188 barrels	5,940
Liver oil	33,352	65,890	101,068	9,105 "	200,310
Total	266,611	158,461	102,397	...	527,469

From another table prepared by Mr Crowe, it appears that during the six years ended 1869, the greatest amount of salt fish exported was in 1867, when the value was £8,026,656, and that of liver oil, £13,088. For the year 1869, these amounts were, respectively, £5,248,744, and £7,744. No account is kept of the quantity retained for home consumption. It is, doubtless, very large, although the amount exported is, probably, the greater proportion of the catch. Practically, the Icelandic fisheries are nearly inexhaustible. At present, they are worked by the natives, notwithstanding their skill and intrepidity as mariners, with poor appliances, and little, if any, intelligence or energy. There is no knowing to what extent the even-now considerable returns might not be increased, if all the advantages of modern improvements and commercial enterprise were enlisted to make the best of this natural and generous source of wealth.

We referred in the first paragraph of this paper to the untravelled and inhospitable character of inner Iceland. Since writing it, we have learned that Captain Richard Burton, the new Consul for Trieste, has recently returned from an expedition into the interior—not, we may conjecture, unproductive of experiences by field and firth, which, let us hope, will be related to us by that most indefatigable of travellers.

THE NAVAL SCHOOL AT GREENWICH HOSPITAL.

Very little notice appears to have been taken of these schools in the public press, although they are supported by one of the most splendid revenues that this country possesses. So we may take it that the changes introduced as to its administration are among the things not generally known, even to our readers, and that they may fairly claim a passing review at our hands.

The School was originally formed at the end of the seventeenth century by Royal Charter, for the benefit of the children of seamen killed in action. In 1820, it was amalgamated with the Royal Naval Asylum, with a maximum complement of 800 children, some of whom were girls. The girls' school was abolished in 1841, and although it appears that funds exist for the maintenance and education of 1,000 children, the School does not now contain more than 780 boys. Many changes have taken place in the general system of education pursued, and it was evident that, up to 1870, the class of subjects taught tended very much to render the pupils fit for callings far above those for which they were primarily designed. Several Admiralty Committees sat upon the subject, and, about two years ago, under the auspices of Mr. Childers, then First Lord, it was resolved to reorganize the School on the industrial plan, or what is commonly called the half-time system, the *rationale* of which consists in sending half the boys to school and half to the shops or work-rooms, changing rounds each day. Staff-Commander C. Burney, R.N., was appointed Superintendent, with full powers, and the present staff consists of a medical officer, chaplain, three nautical and four general masters, and a certain number of seamanship instructors, serjeants, and corporals. The claims for admission into the School are as follows, arranged in order of precedence:—(1) orphans, both parents dead; (2) sons of fathers killed, drowned, deceased, wounded, or seriously maimed in Her Majesty's service, or while employed by Her Majesty on board a merchant ship, or in action with an enemy, pirate, or rebel; (3) those whose fathers, having served in the Royal Navy or Marines, are dead; (4) those whose fathers are living, but whose mothers are dead, according to rating and service of father; (5) sons of naval pensioners, and sons of seamen and marines now serving, both parents living; (6) sons of seamen and marines entitled to the benefits of Greenwich Hospital, not included in the foregoing classes; (7) sons of other seafaring persons. We may remark, by the way, the noteworthy fact that the Merchant Navy have a distinct interest in Nos. 2 and 7 of this list. The whole School is arranged into the general and selected divisions, the former cor-

taining 720 and the latter 80 boys. Boys eligible for admission must be from 10 to 10½ years of age, physically fit for sea service, able to write an easy sentence and possessing a knowledge of the first four rules of arithmetic, and the applications must be registered between the ages of 9 and 10. All who do not obtain entry into the selected or nautical division at 13 years of age, or volunteer to enter the Royal Navy as boys are discharged the school. The trades taught are carpentering, which employs at one time 20 boys, shoemaking 40, tailoring 80, music 100, and seamanship 320, leaving about 150 to do duty as scrubbers, cleaners, and general assistants in the domestic duties of the school. All the boys are taught to make and mend their own clothes, and as regards music, it is arranged that the demand of the Royal Navy for musicians, should be, as far as possible, supplied from Greenwich Hospital. The education in the general school, including arithmetic, English history, geography, and grammar alternates with industrial work, and that in the selected or nautical division of geometry, algebra, trigonometry and French, and the boys of this division on their discharge at 15½ years of age become engineer students, pupil teachers, writers, ships' stewards' boys, or are placed in such other positions in the Navy as they are best qualified to fill.

As a result of these changes, the internal arrangements of the building have been somewhat altered. The large dining hall in the eastern pavilion is arranged, as far as possible, to resemble the 'tween decks of a ship, and has, by the way, been lately much brightened and ornamented by the liberality of Mr. Graves, Pall Mall, who has given a lot of capital engravings. The middle pavilion contains the school-rooms; and the west wing includes the shops and seamanship instructions. Of these last there are six, the first containing two large double diagrams, with sails, spars, ropes, &c., all named and numbered for reference, an anchor, and a working topsail, the second, bars on which to practice bends and hitches; the third, specimens of all the knots, splices, tackles, and purchases used afloat; the fourth, a working model of a full-rigged first class frigate, large enough for three boys in each top; a first class steam screw corvette for instruction and reference; a working model of a top-mast, and examples of standing rigging, as dead-eyes, heads for home stays, &c. The fifth room is as yet incomplete, but will be used exclusively for compass instruction, including the rule of the road at sea. The last room contains a large working model of a full-rigged ship, with sails set, a double wheel and complete steering apparatus, designed by the present superintendent. The wheel is manned and worked *en regle*, and the *rationale* of wearing, tacking, going out, &c., is performed as fully and completely as on the water. These instruction rooms are indeed well worthy of inspection by all those interested in the manning of our Royal or merchant fleets.

Little need be said as to domestic and sanitary arrangements. They are all good, and indeed ought to be. There is a large swimming bath at the rear of the buildings. A ship is being erected in the grounds, and a large gymnasium is in course of construction, which will probably rival in extent any in London. Boats are also provided for rowing exercises on the Thames. It is very well known that up to the present date the Royal institution, with all its means, appliances, and almost unlimited financial resources, has sent, comparatively speaking, very few boys to sea. Where they have gone we are not prepared to say, and do not very much care to know; but, inasmuch as the recent changes have been affected with the main object of strengthening the efficiency of the service, it must be expected that the public will watch the result of the experiment very narrowly indeed. There is an old tradition, not yet exploded, and by no means without foundation, that no sailor can learn his business properly ashore, and it is for the Superintendent of the Greenwich School and his satellites to show that this tradition is untenable. We shall revert (in a future article) to the claims of the children of merchant seamen to share in the benefits of this establishment.

VENTILATION AND HEALTH IN SHIPS.

BY DR. WILLIAM H. PEARSE.

THE following paper was read at the recent meeting of the Social Science Congress at Plymouth and Devonport:—

This paper is based on experience in Emigrant and Passenger ships, both European and East Indian. These ships have in general a clear between decks, or divided only by bulk heads, which allow of ventilation. The ventilation of these ships should be by deck openings, and independent of side or stern ports. Great discomforts exist in many passenger steamers where, in monsoon or tropical weather, the ports have to be shut, no other adequate system of ventilation existing. Emigrant ships are far better ventilated than passenger steamers. A ship has to be provided with means for ventilation suited to tropical and high latitudes, to calms and strong winds: all such conditions are met with in a single voyage.

A rule or law seems to exist, which should be made the basis of ventilation—viz., that the atmosphere of the between decks moves *en masse* in an opposite direction to that of the upper breeze. It rushes toward one or other end of the ship, and, being warm and light, ascends and escapes. Suitable means for escape have therefore to be provided at both ends of the ship; but whilst escape is going on at one end, the

compensating supply takes place at the other end : both ends have therefore also to be provided with means for protecting the people against the dangerous down draft. The following instances illustrate the law. They are taken from the ship *Accrington* of 1,900 tons ; Southampton to Melbourne, 1862 :—

	Temperature below.			
	Aft :	Main-mast.	Fore-end.	
22° S. L.	70	—	74	Close hauled.
40° S. L.	50	53	57	Close hauled.
40° S. L.	68	67	58	Gale : yards square
44° S. L.	64	63	54	Gale : scudding.

The law is most clear when, in heavy weather, hatches, skylights, &c., have to be much closed, and when, therefore, an effective ventilation is most needed. The warm between deck air is also found to pour up the weather openings more than up those to leeward. The paramount aim in ventilation is first to attain to effective means of escape : the supply of pure air is then an easy matter. In many voyages, with from four to five hundred people below, cowl-headed tubes, at the ends of the ship, and always kept turned to leeward, of eighteen inches in diameter, have proved most effectual : the hot foul air rushes up such tubes. After 500 people have slept below all night, the between decks is not offensive or close in the morning, even where from rain, &c., the deck openings have been much closed, and this too, in tropical weather. The protection from the down draft at the other end can be effected by canvass screens. As modern emigrant ships are ventilated, there is more danger from draft and cold than from want of air.

The law is not always so clearly seen as in the instances from the ship *Accrington*. In the ship *Hougoumont*, of 900 tons, Plymouth to Adelaide, 1866, 60 observations were made.

Wind ahead 32	Hottest forward ...	20.	Stern Ports open ...	19
	Hottest aft ...	8.	ditto ...	4
	Equal fore and aft ...	4.	ditto ...	4
Wind aft 20	Hottest aft ...	12.	ditto ...	10
	Hottest forward ...	5.	ditto ...	2
	Equal fore and aft ...	3.	ditto ...	3
Calms 8	Hottest forward ...	1.	ditto ...	1
	Hottest aft ...	7.	ditto ...	7

The *Accrington* had a between deck very uniform in size, and with

very uniform deck openings fore and aft; she was also a flush-deck ship. The *Hougoumont* was an old-fashioned pooped and top-gallant forecastle ship, whose deck openings were less equably distributed, yet the law appears very clear in the table. Although the *Hougoumont* was "naturally" hottest aft, yet, when the wind was ahead, the between the deck atmosphere rushed forward in 20 out of 32 occasions. Again, when the breeze was aft, the stern ports being open ten times, and thus admitting the cold breeze direct, the after end was hottest twelve times out of twenty. The *Hougoumont* had 170 square feet of deck openings, and, in addition, four large stern ports. Many circumstances tend to interfere with the action of the law, e.g., size of deck openings, position of sails, &c. Neglect of submission to this law has led to the failure of many patented and other plans of ship ventilation, e.g., those of McKinnell and Dr. Edmunds.

Whilst this law had been made the basis of successful ventilation in emigrant and passenger ships, no experience can be given of ironclads, or other ships of war, of peculiar construction.

The other part of the subject is the relation of ventilation to health and disease. Whilst due ventilation is so essential, yet excessive draft and cold, especially at night, is most dangerous to health. People of low vital resistance pass into disease coincident with the shock or depression of the early periods of the voyage; and, again, in the colder latitudes, the warm tropical, and even equatorial calm-belt latitudes, are often those of least sickness. The modern development of the chemistry of the gases, and also the knowledge we have attained on cell and germinal growth, have given rise to theories on "poisons," "gases," and "germs," as potential causes of disease. However true and important are these views, yet, if we act much on them, and ventilate to a degree which shall depress the people, disease will appear. It is of the utmost consequence to conserve the vital power of the people by rest and warmth, giving due, but not excessive, ventilation. If, on sailing, we ventilate from a fear of hypothetical poisons, germs, &c., to a degree which will depress, the European will pass into those diseases which are "natural" to him, such as chest affections, fevers, infantile fevers, diarrhoea, &c. The East Indian also will deviate out of his normal rate of health, into his own special diseased rates, such as cholera, ague, intermittent fevers, dysentery, ulcers, &c. One and the same change, or removal from the entirety of their accustomed relations, will be, in the different races, the occasion of the appearance of very varied diseases.

Whilst in earlier experience the greatest fear existed of the appearance of disease from want of ventilation, voyage after voyage forced the conviction of the necessity of protection from depression and cold.

To illustrate the truth of these views, the records of the ship *Accrington* show an epidemic of severe sore throat, as dormant during the warm latitudes, and breaking out in south cold latitudes. The weekly return of such cases throughout the voyage were 0, 0, 1, 3, 0, 7, 2, 0, 17, 19, 27, 5. In the ship *Star of the South*, of 1,300 tons, from Liverpool to Melbourne, with over 400 people in the between deck, insidious lung disease showed from sailing; but on reaching 40 S. lat., the cases assumed the form of fever, and many young adults died; the fatal and other cases were, in a marked degree, near hatch openings; the temperature was from 50 to 60.

Again, in the ship *Hougoumont*, Plymouth to Adelaide, 1866, fever of the forms of measles, scarlet fever, hooping cough, increased in the colder "Cape" latitudes. The weekly return of such cases throughout the voyage was 1, 1, 8, 0, 0, 0, 3, 9, 10, 5, 3, 3, 2. The same experience could be shown from numerous other voyages, both with Europeans and East Indians.

Seeing that diseases, so very varied, appear in the different races, when subjected to the depression of the earlier periods of voyages, we are not only led to the practice of conserving the powers of the system, but a general idea arises—viz., that what we are accustomed to view as distinct entities, or diseases, such as the series of infantile fevers, dysentery, cholera, etc., are phenomena, or deviations of a latent capacity, existent in the system, and which naturally show when the body is changed from its entirety of accustomed relations.

The whole experience of ship-board life is full of interest and suggestion to the medical officer, both as regards his immediate action in the discharge of his duties, and also in opening his mind to wide views and knowledge on man, and the altered rates of his system, known as disease.

SCARCITY AND DETERIORATION OF SEAMEN.

(COMMUNICATED.)

THROUGHOUT the country a loud cry has been raised about the scarcity of seamen. Shipowners state that it is sometimes difficult to find crews to man their ships; and when they do find them, a large proportion of men, calling themselves able seamen, are nothing better than grass combers and lubbers, unable to heave the lead, or to hand reef and steer; they allege that the apprentice system by which our supply of seamen was kept up has failed, owing to the desertion of apprentices during the first or second year of their indentures.

Alarmists in and out of Parliament point to this state of things, and ask how we are to man our fleet in the event of war. The Royal Naval Reserve, they say, formerly numbered 17,000 men; at the present time it does not reach 18,000. These statements have been brought under the notice of the Board of Trade, and that department has set about collecting information with its usual promptitude. At the principal ports in the kingdom, shipowners have been invited to discuss the subject with the officials of the Board, and to express their opinions without reserve, in order that remedial measures may be applied if it be found necessary.

Hitherto the evidence has been entirely one-sided. Shipowners have spoken (some of them in anything but complimentary terms of our jolly tars), pseudo-philanthropists shake their heads dubiously whenever the sailor's name is mentioned; while Jack himself is hardly aware that he is exciting so much interest, and opens his eyes in wonder when he looks at the picture in which he is requested to recognise his likeness. Perhaps you will allow me, an humble member of the great and honourable seafaring community of England, to tell the country, through the pages of the old *Nautical*, what sailors themselves think on these matters. In the first place I emphatically deny that sailors have deteriorated. They have their faults in common with their brethren on shore; but they are steadily advancing, not only in knowledge of their business, but also in sobriety and morality. They have as much pluck and endurance as they had in the days of Cook and Nelson; and should occasions arise for the exercise of those qualities, the British seaman will be as ready now as he was then.

Thirty years ago most of trading ships employed in short voyages were laid up during the winter season, and seldom put to sea until March or April, and even then they would sometimes lie in port many days, waiting for a fair wind. At the present time, ships put to sea in all weathers, both in winter and summer. At all seasons our sailing ships are found beating round the Horn, or contending against adverse monsoons in the China and Indian Seas, making passages which would have been pronounced impossible by the sailors of a by-gone generation. Our ocean steamers sail as punctually as express trains, and successfully battle with the fiercest Atlantic gales. The British flag waves at all times of the year, in the most distant parts of the world; the globe itself has been encircled by the electric cable; all these feats have been accomplished by the agency of the British tar, and yet our employers have the effrontery to say that we have deteriorated. We might retort and say that our employers have become rich, while we have remained poor; and tell the shipowner that property has its responsibilities, as well as its privileges. With one or two honourable exceptions, shipowners have done little or nothing for the benefit of sailors.

In regard to the scarcity of seamen, let us look at the facts. Seamen have certainly not increased in the same ratio as the tonnage of the United Kingdom. But steamers do not carry as many seamen in proportion to tonnage as sailing vessels do. For example, a steamer of 1,000 tons, will only carry six or eight able seamen, while a sailing vessel of the same tonnage will require three times the number. But, after all, the rate of wages is the best test. By the law of supply and demand, whenever there is a scarcity of any indispensable article, the price invariably rises. Sailors' wages, for long voyages, are at the present time, 55s. per month, in sailing vessels, and 70s. in steamers. Referring to an old wages book in my possession, I see that they were just 50s. in 1852, or twenty years ago; so that wages have risen about 10 per cent. In the same period, mechanics wages have risen fully 90 or 40 per cent., while their hours have been shortened very materially. With sailors' wages at 55s. per month, I cannot understand how anyone can say that there is a scarcity of seamen, and after careful inquiry at two of the principal outports, I have not heard of a single instance of a ship being detained for want of a crew, where the owner or master had exercised ordinary foresight in looking out for men in time. The disparity between the pay of seamen and the pay of landmen is so great, that large numbers of our best seamen leave the sea for more lucrative trades on shore. At a small seaport, in the north of England, many sailors are employed in the coal mines; sailors having a wonderful knack at turning their hands to anything. It is true that the apprentice system is not successful: but what is the reason? Just this—that the wages of apprentices to the sea service are just the same as they were forty years ago—viz., about £40 for four years' service. Let the shipowners pay their apprentices at the same rate as they pay ordinary seamen, and there will be few, if any, desertions; the number of apprentices would immediately increase, and ordinary seamen, or "*half marrows*," as they are called in the north of England, would decrease. It were an easy task to multiply arguments similar to the above; but these will be sufficient to show that shipowners have the matter very much in their own hands. If they are willing to pay for a good article, it will be forthcoming; but as long as sailors' wages remain at the present low figure, our best men will seek more lucrative situations on shore, both at home and in our Colonies, the latter being admirable fields for the "*Jack of all Trades*" kind of education which sailors pick up on board ship.

THE WEATHER IN THE BRITISH ISLES DURING
AUGUST, 1872.

THE hot, close weather of July terminated very abruptly at the end of the month, and the first few days of August were marked by unusual dullness and cold. On the 1st, the barometer was highest in the neighbourhood of the English Channel, but low over Norway. Light northerly breezes were general, cloudy weather prevailed, and during the day thunderstorms occurred in several parts of England and Wales. For the next two days the weather continued to get colder; and on the 3rd, the northerly wind, which now extended over the whole of Western Europe, was *very* bleak. The thermometer was as low as 54° F., in the south of France at 8 a.m., and did not rise above 60° at Toulon all day. Thunderstorms were again reported from the south-east and east of England, and at Biarritz. After the 3rd, an improvement occurred, at least so far as temperature was concerned. Pressure increased, generally, and temperature rose fast in the south of Europe; but, except during a part of the 8th and 9th, the weather remained damp and unsettled. Even on the 8th, thunderstorms occurred in the north and east of England. On the 10th and early part of the 11th, the southerly current became more general, and strong in many places; while the weather was decidedly warmer, and more genial, notwithstanding its being still rainy. With the 12th, however, a colder period had returned, and northerly winds; the 14th found us with high pressure, low temperature, but clearer skies. On the 16th, the south-western portion of a large anti-cyclone stretched from Norway, across the North Sea, to our east coast, while a cyclonic disturbance of no great strength, passed northwards, along our western coasts. The result of these conditions was, that while the southerly wind was fresh in the west of the United Kingdom, and brought a great deal of rain, in our more eastern counties, and on the Continent the sky cleared, and a marked increase of warmth was reported. Until the 20th, bright weather prevailed, with light south-easterly winds; but, after this, the thundry weather, so characteristic of the present summer, reappeared, by a storm travelling from the south of Ireland, across the south-west of England, to the north-east of France, where it was reported at 8 a.m., on the 22nd. Until the 25th, clouds prevailed everywhere, and some rain fell in the north-west; but then, though there was a temporary clearance of the sky in France, rain became more general in the west of our islands, and spread rapidly to all the north-west of Europe, with thunder at Scarborough. On the 28th, the northern parts of the country were still marked by rain, while the remainder of the kingdom had finer weather; but the rain gradually extended south-

wards, so that on the 29th only our most southern stations and France escaped; and on the 30th wet weather was general, and hail fell at Valencia. Similar conditions prevailed on the 31st.

Barometrical pressure was generally rather high for the month; and, with the exception of the fall caused by the depression which crossed the country between the 10th and 12th, the changes were slight, though frequent.

Temperature was low, except from the 16th to the 21st—especially in the early part of the month. By far the warmest days were the 17th and 18th, when the thermometer rose above 80° in most parts of England.

The winds were, as a rule, light, and very variable; the percentage of northerly winds being large. A strong westerly breeze occurred in the Channel on the evening of the 6th; and a fresh southerly gale prevailed in St. George's Channel and the Irish Sea on the 9th, followed by a westerly gale next day, when, too, a fresh south-westerly gale was felt in the English Channel. Fresh south and south-south-east breezes occurred along our west coasts on the 16th and 17th also.

The sky was usually cloudy—a marked exception being recorded during the period from the 16th to the 20th. The weather was very wet in the western and northern counties. Thunderstorms were reported from different parts on the 1st and 2nd, and daily from the 5th to 10th, on the 21st, 30th, and 31st. Those of the 2nd produced very heavy rain in the south-eastern provinces, and on the 6th it was very heavy at our west stations; while, on the 7th, the storms, though very general, do not seem to have been accompanied by so much rain as is frequently the case. The storms of the 30th, also, were very general. Brilliant Aurora was seen in the west and north of our islands on the 8th; and very heavy rainfall occurred in Scotland from the 10th to the 12th, as well as in St. George's Channel on the 21st.

SHIPS AND SAILS.

2.—CUTTERS AND YAWLS.

The cutter-rig is a favourite one for yachts, and there are probably more of them in our unrivalled fleet of pleasure craft than of any other. Of yawls or, as they are generally called, dandies, there are not so many, though they form a large proportion, being somewhat handier than cutters, if they cannot sail as fast, and, in large vessels, generally requiring a smaller crew. The principal sails of a cutter are a mainsail, stay-foresail, jib, and gaff-topsail; but besides these, when running

generally set a large square sail and sometimes a flying jib or jib topsail. Owing to the large spread, cutters generally sail faster than yawls of build; in fact, cutters generally carry more sail than any other class of vessel, which accounts for their use for other purposes where fast sailing is required. For cruising, however, yawls or schooners are preferable. Most of the vessels in the revenue service are very fine craft. Steamers have superseded cutters of late years, and will probably supersede

A dandy-rigged vessel, has precisely the same sails as a cutter, but the mizen, which is set on a short mast at the stern, is a lug-sail, but in small dandies sometimes a boom is of course shorter, and occasionally dismasted, though not in a large yawl, but it must swing out, and therefore cannot overhang the stern as in a cutter. The mizen-sail of the cutter is thus much reduced in weight and a smaller crew consequently suffice for working her. The dandy, metaphorically speaking, takes care of itself. The dandies are rigged as cutters and yawls, and a great many of them, the finest of which are the Yarmouth trawlers. They range from 40 to 70, or even 80 tons, and carry from 100 to 150 men. They go out in fleets of from 100 to 150, and fish in the other parts of the North Sea. They remain at sea for several weeks, and the fish they take, being kept alive in ice, are packed in ice and sent up to Billingsgate, which are fast sailing cutters, and ply backwards and forwards between the fishing fleet and London. There are a few dandies and that in the plate (see Frontispiece) may be one of them. A cutter by the white ensign at her peak and the dandy at her head.

They are usually built with sharp bows, a very clean hull, and a counter: and are deep in the water so as to give them a good sea-bow, and make them stand up under the large press of the sea.

IN THE DANUBE.—The following are the depths of the Danube, according to the Commission Notice of 1854: Chatal, 16 $\frac{3}{4}$; Ismail Chatal, 21 feet; Algani, 15 $\frac{3}{4}$; Gorgova, 16 feet; Monothendri, 16 feet; Gorgova, 15 $\frac{1}{4}$; and 20 feet.

CORRESPONDENCE.

SCREW PROPELLERS.

To the Editor of the Nautical Magazine.

Valparaiso, June 27th, 1872.

SIR,—As the object of your valuable publication is to give information to the nautical community on subjects affecting their interests, I beg to offer the following account of the method adopted here recently in fitting a new screw propeller to the s.s. *Lusitania*. Before entering into detail, however, I must beg it to be understood that I do not claim the merit of originality in the method adopted. But, taking into consideration the magnitude of the undertaking, and the success that attended it, I venture to hope that this short account of it may not only prove interesting to your readers, but may also be of service to those who may have a similar difficulty to contend with, in proving to them its practicability.

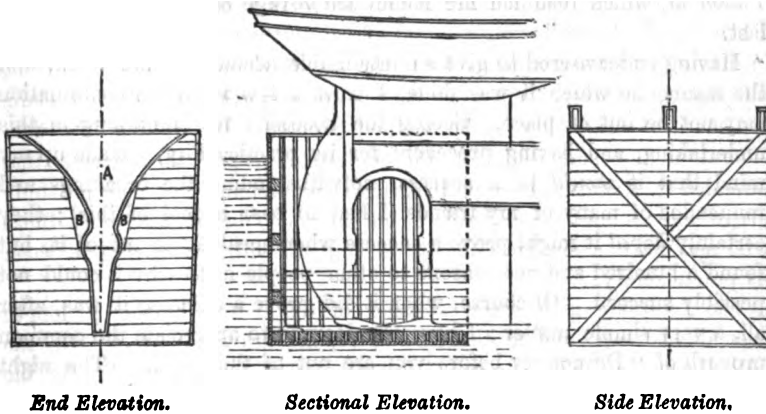
The *Lusitania* is a screw steamer of 3,500 tons burthen; length over all 410 feet, and at the time of repairs drawing 24 feet. On the 14th December, 1871, she sailed from this port for Liverpool. On the 20th she returned with three of her blades broken and boss shattered. As there were no docks here capable of receiving a steamer of her size, and no part of the coast within several hundreds of miles with sufficient rise and fall of the tide to beach her, I recommended to the company's agent, Mr. David Sim, the building of a caisson for the purpose of executing the repairs, and took upon myself the responsibility of carrying out the operation in detail. This recommendation was adopted.

I then set to work and measured off a distance from the stern post forward, as the place to which the caisson was to be fixed, allowing in the measurement breadth for two feet of clearance at each end of the propeller when lying in a horizontal position. The part of the ship the distance gave me was used as store rooms. The first thing to be thought of was, how to get the form of the ship, at this position. This I did by tearing down shelves and clearing away to the skin, and fitting boards to the sides of the ship, holding them in their places by cross pieces, the whole being put together with screws, so that this frame could be taken to pieces and re-formed when required for shaping the aperture in the end of the caisson. At the shaft opening, which was circular, the carpenter could not get further down than its semi-diameter from want of space. From a plan of the ship I took the thickness of the keel, and the distance from its under side to the centre of this opening; this given, the remaining forms and sizes to be obtained became given quantities.

I assumed them so to be, and afterwards found such to be the case for all practical purposes.

The dimensions of the caisson were as follows—viz. : length, 24 feet ; depth, 26 feet 6 inches ; breadth at the bottom, 22 feet ; ditto, top, 24 feet. The scantling 8 inches square sheathed, with 8 inch planking, well kneed, and strapped with iron.

I enclose a drawing of same, which will assist my description of it.



CAISSON, STEAMSHIP LUSITANIA.

A. the opening to fit to stern. B.B. portable pieces for allowing the caisson to pass up over the swell of the shaft aperture, and afterwards to be fixed by the diver. The aperture was padded with a canvas hose, filled with cotton waste, of about 4 inches in diameter ; the heels of two stout shores were made fast in the after-part of the caisson, in readiness to take under the ship's counter when pumping commenced. This huge box was put together on the beach, and, when completed, presented a very formidable appearance ; launching ways were laid, and it was successfully floated off. For the purpose of lowering it under the ship's bottom, I had a heavy spar rigged over each quarter, resting on the taffrail, with tackles attached to their ends for lowering it down. Chains were also conveyed to the bottom of the caisson by rollers attached to the ends of these spars, so that the weight could be balanced by lowering or heaving out, as required.

The lowering down of the caisson, and attaching it to the ship's bottom, caused little trouble ; the diver went down and fixed the pieces B.B. in their places, the tackle were hauled taut, and carpenters stationed with shores and wedges ready for use, when required ; the pumps were set to work, and we soon had the satisfaction of seeing that the caisson

had taken. Shores were secured and pumping continued, until the water was about 8 feet below the boss, this being low enough for all practical purposes. Besides, I did not care to increase the pressure on the structure, which had then lifted the ship 8 feet 6 inches out of the water. Stages were fixed, and the work of taking off the broken boss commenced.

In six days from this time a new propeller had been fitted to the *Lusitania*, which resumed her homeward voyage on the 10th February last.

Having endeavoured to give an intelligible account of the work, and the manner in which it was done, I trust a few words in continuation may not be out of place. Seeing the necessity for embarking in this undertaking, and having precedent for its practicability, I made up my mind that it *should* be a success, notwithstanding the croakings and innuendos of many of my friends (I had to bear a deal of this); they certainly *hoped* it might prove a success when speaking to me of it, but found a hundred and one reasons to other people as to why it could not possibly succeed. Of course, when it did prove a success, it was, after all, a very simple matter; I have also learned to appreciate the common proverb of "Do not cry before you are out of the wood." The night after the sailing of the *Lusitania*, I indulged in the pleasing reflections that I had succeeded in affording the means of fitting a new screw, in an open bay, to a steamer of 3,500 tons burthen, and drawing 24 feet of water, without discharging a pound of cargo or involving any accident even to the extent of scratching a man's finger engaged in the work.

I must confess that not the least pleasant of my reflections was the one that I had at last got rid of the ship. The following day I was aroused from this pleasant reverie, the *Lusitania* having been obliged to put back once more with two of her blades gone. I need only add that the same work had to be done over again; she resumed her voyage, however, on the 24th February, and reached Liverpool all well on the 18th April.

I am, Sir, your obedient servant,

CHARLES H. SIVELL,

Marine Supt. Pacific Steam Nav. Co., Valparaiso.

APPOINTMENTS.—The Queen has been pleased to appoint Robert Little, Esq., M.D., and Thomas Shelford, Esq., to be members of the Legislative Council of the Colony of the Straits Settlements; William Hastings Alexander, Esq., to be a member of the Legislative Council of the Colony of Hong Kong; and William Rowland Pyne, Esq., to be Receiver-General for the Island of Trinidad.

OUR OFFICIAL LOG.

BALLOT BY MACHINERY.—Mr. J. McFarlane Gray, the Patentee of the Automatic Steering Engine of the *Great Eastern*, H.M.S. *Sultan*, *Monarch*, *Northumberland*, *Prince Rupert*, &c., has invented and patented a Ballot Machine, which he explains as follows:—This contrivance for carrying out the provisions of the Ballot Bill enables one attendant, who may be any ordinary policeman, to discharge all the duties now performed by the returning officers and a large staff of extra clerks. The work will be better done and in less time than by clerks. There is no possibility of error, the mechanism defies fraud, it sides with no political party, and it is as blind as Justice. It operates openly, and yet without disclosing the voting of any elector. There is no counting by appointed officers in private; it is secret voting by an open Ballot. The system, in all its parts, is the simplest possible; the elector is not required to write or even to make his mark, and if he cannot read he can give his vote quite as well, without error and without assistance. The act of voting is reduced to a movement of a beer engine handle, an operation with which some electors may be already familiar. The machine is protected from fraud or malice of the elector; it is also equally protected from dishonesty on the part of the returning officer, for the Ballot Cabinet declares its own polling, and, in this respect, every onlooker becomes, in the same degree, a returning officer. The cost of one machine will not exceed the amount usually paid for the services of a staff of clerks for one election, and the same machine can be used for a thousand elections one after the other. Where a great number of electors have to vote, more than one machine can be employed to complete the polling in a few hours if necessary. The apparatus consists of a voting cabinet with non-return entrance, and exit turnstiles. At the entrance, an attendant receives the voter's register ticket, examines it, and, if correct, he passes it through a letter slit into a receiving box, and allows the voter to go through the turnstile and into the cabinet. The turnstile operates an open counter-index, showing the number of voters who have passed in. Within the cabinet, the voter finds a series of lever handles, a handle for each candidate, the names being prominently exhibited at each handle, and shown also by distinguishing colours, to enable those who cannot read to vote by taking notice of the colours only. These are the voting levers. The voter is alone while in the cabinet, and being free from observation can vote in secrecy. He votes by moving one at a time the handles or levers corresponding to the candidates for whom he wishes to vote. The spindle carrying these voting levers is so connected with the spindle of the turnstile, that the

movement of the latter regulates the number of votes allowed to each voter. He may move any one of the voting levers from one position to another, and back again, but he can move only one lever at one time. According to the conditions of the election, the voter may have only one, or more than one vote, and when he has given the number of votes allowed to him, the handles become locked, preventing any further voting by that elector; and they remain immovable, until the entrance turnstile has admitted another elector. Each elector is also compelled to restore the levers to their original position before he leaves the cabinet, for the exit turnstile cannot be moved until they are all restored to their first position. The entrance turnstile also remains locked until the elector has left the cabinet, so that there cannot be two electors in at the same time. This locking and unlocking is all accomplished self-actingly, by the action and re-action of the necessary movements of the apparatus; no time is lost by it, and it will not be observed that there is any locking, unless a voter should attempt to do some wrong, when he will at once discover that the machine will not be imposed upon, and that he is its prisoner. The machine requires no attendant for these movements; they are all produced automatically. To each voting lever there is fitted a counter-index, numerating the votes given to each candidate, and when more than one vote is allowed, there may also be a lever for blanks. The faces of these counter-indexes are placed outside the cabinet, and they are covered by a shutter while the voting is going on. At certain intervals the shutter can be removed to show the state of the poll, and so prevent, to some extent, unnecessary overvoting for any candidate. Voting would cease while the shutter was removed. When the election is over, the state of the poll is declared at once, by merely removing the shutter. When there is more than one vote allowed, and a lever for blanks is employed, there would be also a counter-index for the lever spindle. The face of this counter, as well as that of the turnstile counter, would be exhibited throughout the whole of the polling, and the public could thereby be satisfied that only the proper number of votes were given by each elector, and, when the shutter is finally removed, the votes given to the different candidates, and the blanks, if any, could be added up, and would agree with the totals shown on the index of the voting spindle, and with the number of tickets found in the receiving box. In this way, the working of the mechanism would be shown to be reliable. The working parts are all, except the lever handles, under cover, so that they cannot be tampered with or disarranged by any elector. The whole of the mechanism will be so substantial and so simple that it will be impossible for anyone even maliciously to injure it, unless armed with implements of destruction. Outside the cabinet there will be a set of dummy levers, with marks and colors,

fac-similes of those inside, to enable the voter to become acquainted with the mode of voting.

CANADIAN REWARDS.—Among the list of rewards, destined by the Marine Department at Ottawa, to seamen who have saved life or property, or performed other meritorious services in connection with the shipping of the Dominion, we notice an aneroid to John Orsato, master of the brig *Canada*, of Jersey, and a binocular glass to Captain David Thomas, master of the ship *William Jones*, of Newport.

THE FIRST AMERICAN IRON OCEAN STEAMER.—The following are the principal dimensions of the steamship *Pennsylvania*, belonging to the American Steamship Company (Philadelphia and Liverpool Line), launched at Philadelphia on the 15th August last:—Length over all, 855 feet; length from forward part of stem to stern-post, 843 feet; from forward part of stem to propeller, 836 feet; beam, extreme, 43 feet; depth of hold from top of floors to top of spar deck, 32 feet 6 inches; hold, molded, from spar deck stringer-plate to top of keel, 38 feet six inches; depth of floor-plates, 2 feet; hold, from top of floors to top of lower deck, 16 feet 8 inches; from top of lower deck to top of middle deck, 8 feet 4 inches; from top of middle deck to top of spar deck, 7 feet 6 inches; from top of keel to top of spar deck, 84 feet 6 inches. Tonnage, O.M., 3,016; capacity of coal bunkers, 720 tons. Cargo space—Middle between decks, 65,101 cubic feet, at 40 cubic feet per ton, 1,627 tons; after hold, 24,107 cubic feet, 602 tons; forward, 42,082 cubic feet, 1,052 tons; upper between decks, 22,946 cubic feet, 578 tons; total, 154,236 cubic feet, 3,854 tons. Capacity for a cargo of compressed cotton, at 80 cubic feet per bale, 5,141 bales. Her draft will not exceed 20 feet 6 inches in fresh water, with coal bunkers full, and a dead-weight cargo of 1,740 tons (2,240 lbs.) or a measurement cargo of 8,854 tons (40 cubic feet), also a full complement of saloon and steerage passengers, officers and crew, all necessary stores and outfit on board. Her draft is not to be less than 19 feet 6 inches. The hull and appendages have been built and fitted out in accordance with English Lloyd's Register, in addition to which the main or middle deck has under its 4 inch yellow pine plank a deck of 5-16 iron for two-thirds of the length of the vessel, securely fastened to the stringer-plates and deck-beams. Passenger accommodation is provided for 76 in the saloon. The steerage will afford ample room and comfortable accommodation for 854. The average contract speed is to be $11\frac{1}{2}$ knots on an average consumption of 40 tons (2,240 lbs.) of coal in 24 hours. The materials entering into the construction of hull, boilers and engines, the joiner-work and outfit, is, as far as possible, of American manufacture.

A WATERY GRAVE.—Some curious facts are related in connection with Lake Tabor, California, by a correspondent writing from there to the

San Francisco Bulletin. It appears that several persons have been drowned in the lake during the past ten years, but none of their bodies had ever been discovered. This fact gave rise to the superstitious belief that some monster dwelt in the waters, and that all the bodies were consumed by it. The true explanation of the mysterious non-appearance of the bodies is said to be due to three causes. The first is the great purity of the water, and its consequent lack of buoyancy. The second and main cause is due to the great coldness of the water. Even at this, the warmest season, the surface water is as cold as the drinker desires it to be, but it is warm there compared with its temperature at the depth of 100 or 200 feet. When a body sinks in the lake to the depth required, it is frozen stiff. The process, of course, preserves it, so that the gas which originates in the body from decay in other water is prevented, and distension checked. The body is thus kept in a state of greater specific gravity than the water in which it is suspended, and thereby prevented from rising to the surface. The third cause lies in the great pressure of pure water on anything which is sunk to a great depth in it. Corks placed on deep-sea nets are pressed down in a week to half their size, and one of the oldest residents of the lake expresses the belief that, by the time a man's body has been suspended for a week at a depth of about 200 feet (it is not likely that it ever reaches the cavernous and almost fathomless bottom of the great lake), the compression of the water has reduced its size to that of a child's. Doubtless the idea of uncoffined suspension in such a "world of water" is not a pleasant one to contemplate, but to be pressed into a solid mass and suspended in a liquid coffin of ice temperature may be quite as pleasant as interment and mouldering in the ground.—*Shipping and Mercantile Gazette.*

CONSULAR APPOINTMENTS.—The Queen has been pleased to appoint John Elijah Blunt, Esq., now Her Majesty's Consul at Monastir, to be Her Majesty's Consul for Salonica and Monastir, and the districts included in those Vilayets. The Queen has been pleased to approve of Senor Guillermo Roger Gilmore as Consul at Liverpool, of Senor Juan Fleming as Consul in London, and of Senor Jorge Fleming as Vice-Consul in London, for the Republic of Paraguay.

COSTA RICA IMPORTS.—The Board of Trade have received a copy of a despatch from Her Majesty's Consul at San José, reporting that the importation of spirituous liquors into Costa Rica is prohibited after Dec. 31 next.

SAFETY VALVE COMPETITION.—A contribution of Five Pounds has been received from Messrs. Harland and Wolff, Iron Shipbuilding and Engineering Works, Belfast.

REMOVAL OF LONDON SHIPPING OFFICES.—We learn that the Mercantile Marine Offices for Shipping and Discharging Seamen and other business, will be removed from Hammet Street, Minories, on the 26th September, and from the Sailors' Home, Dock Street, on or about the 30th September, to the new Offices at the St. Katherine Dock House, Tower Hill, to which address, after the respective dates, communications for the superintendents should be addressed.

SHIPPING AND MERCANTILE GAZETTE CORRESPONDENCE.

(Reprinted by special arrangement with Sir WILLIAM MITCHELL.)

LEAKAGE AND SURVEY.—Casks, containing treacle or molasses, frequently arrive by local steam packets, with a trifling leakage on the passage, which, if the casks are refused by consignee, and left in the packet shed, sometimes becomes considerable. Surveys held by competent parties pronounce stowage unexceptionable, and attribute loss to casks being filled whilst quite new, without being seasoned to receive the treacle by soaking with water. The senders refuse to allow cost of survey, and allege that agent at port of shipment has signed for casks in good order; yet the representative of shippers admits that in all probability their cooper had not properly prepared the casks before putting them on board. Printed freightage terms of packet except owners from liability for leakage. 1. Cannot the shippers be made liable for cost of survey? 2. Would it be in the power of owners of packets to return any cask received leaking, under charge for double freightage, and could this be done without the formality of a survey?—1. The shippers cannot be charged with cost of survey. 2. Double freight could not legally be demanded against bill of lading freight, or advertised scale. By express terms in bills of lading any conditions to meet the case may be inserted.

MORTGAGE OF SHIP.—A buys a ship from B, through B's agent. A, having insufficient cash to make a settlement, gives B a mortgage for, say, £500, and A subsequently pays off £100. B then sells the ship to C, who pays £200 in cash to B's agent off the mortgage, on B's promise to reduce the mortgage to £200. This B now refuses to do. Can C be prejudiced in any way by having a registered mortgage on his ship for £500, he holding B's agent's receipt for £300? Could the £500 mortgage deed be legally used by B as collateral security for its full amount? The vessel is now partly fitted out, can she be stopped for debts for timber, rope, etc., sold to A and B, C holding a clean bill of sale?—Unless the £300 has been written off the mortgage in the Custom House books, the ship would appear to be mortgaged for £500, and C, as purchaser, would be so far prejudiced.

2. If B has received a portion of the mortgage money, he cannot legally use the mortgage as collateral security for the whole amount. 3. Unless the ship is in the hands of the builder, or material men, they cannot hold her for the materials supplied.

SEA APPRENTICES.—As I have sold my ship, can I put my apprentice, who is bound to me by indenture, to serve his time out in any other ship, though I may not have an interest in her? I have offered the lad either to do this for him, or to cancel his indenture, neither of which he will do, but lays claim to a sum of money?—Our correspondent cannot assign the instrument of apprenticeship, without the consent of the apprentice; and the apprentice, on the other hand, would be bound to serve in any ship commanded by the master to whom he is bound. The sale of the ship does not cancel the indenture.

STOLEN BILL OF EXCHANGE.—A bill, drawn by a banker on the Continent on a banker in England, endorsed twice, has been stolen. The thief puts on a false endorsement, and gets the bill accepted. Payment of the bill was stopped before it was due. What is the English law in such a case, and how long has the true owner of the bill to wait for his money?—By the 9th and 10th Wm. III., c. 17, sec. 8, “In case any inland bill shall be lost or miscarried within the time before limited for payment, then the drawer shall be obliged to give another of the same tenor, the person to whom the same is delivered giving security to drawer to indemnify him.” By the 17th and 18th Vic., c. 125, sec. 87, in case of any action founded on a bill of exchange, it shall be lawful for the Court to order that the loss of such instrument shall not be set up, provided such indemnity is given. This would apply to our correspondent's case.

SHIP'S HUSBAND.—A ship's husband was appointed by some members of, or owners of, a ship, he not being present himself, nor having any interest in the ship, his annual fee being named at £5. 1. Can he legally charge £6 6s. per year for his services? In another meeting of the owners it was agreed that the same ship was to be sold by public auction. 2. Can he legally charge his expenses to go to a distant port to examine the ship, no arrangement to that effect having been passed at the meeting? 3. Can he hold, for himself, any shares of commissions given by shipbrokers, the master himself being the principal and managing owner?—If there were a written agreement, or it could be proved that the sum of £5 was to be the maximum fee, no higher amount should be claimed, if he has accepted the post under those conditions. 2. A ship's husband, appointed by a majority of shareholders, would be entitled to make a journey to inspect a vessel, within the scope of his authority, unless there were some special limits placed on the exercise of that authority. 3. A secret agreement for commission, to be paid by the

charterer, to the ship's husband, out of freight, was held, under special circumstances, to constitute a fraudulent act, subjecting him to dismissal, in terms of contract.—(The *Phæbe*, *Shipping and Mercantile Gazette*, Dec. 21, 1853.) Where no understanding has been come to between the owners of a ship and the ship's husband, we consider that the latter has no right to appropriate to his own use any commissions, whatever, directly derivable from ship's earnings.

LIEN FOR FREIGHT.—I have a vessel about to load in a foreign port, chartered in this country to carry out a cargo of coals free, and to be paid at a rate per ton on the homeward cargo, with a clause in the charter-party as follows:—"Captain to sign bills of lading as presented, and at such rate as may be inserted in them." In order to avoid the risk of having to claim on the charterer by a lower rate being inserted than the chartered freight, how can the captain have a clause inserted in the bills of lading to give a lien on the cargo, the vessel being turned over to another party to load on his account, and who was no party to the charter?—If the charter-party has been signed, it is now too late to insert a clause in it giving a lien on the cargo. If the charterer is also a shipper, he may give a lien in bills of lading on goods belonging to him, but he cannot give a lien on the property of third persons, without their consent. Cargo cannot be detained for the higher, or charter-party rate, and the charterer is liable for any difference between the two.

MATE'S LIABILITY.—Is a mate who tallies in a cargo of teak timber at Moulmein, bound to tally it out at the port of discharge, and is he responsible for any deficiency?—It is the duty of the mate to take the tally of cargo both inwards and outwards. Recourse may be had against a mate for deficiency arising through his mistake.—("Arthur v. Amy," *Shipping and Mercantile Gazette*, September, 1840; the *Catharine*, *Shipping and Mercantile Gazette*, September 11, 1847.) The magistrate at Thames Police Court decided that a Court would make no order for payment of wages, where a loss to the shipowners was proved to be of greater amount, from error in cargo book, than the wages claimed.—(The *Donna Anna*, *Shipping and Mercantile Gazette*, November 1, 1854.) There are many other cases which have been decided in the same way. Proof of continuous negligence and loss, however, must be established to the satisfaction of the Court.

INSURANCE OF STEAMSHIPS.—A Joint Stock Limited Company, registered under the Companies Acts, 1862 and 1867, possesses a steamship. The management of the Company is vested in a Board of Directors elected in conformity with Schedule A of the Act of 1862. A special meeting, convened by due notice, to consider the insurance of the whole vessel, and the deduction of cost out of the profits, decided by an overwhelming majority of those present that a general policy should be

effected. Have the directors the power to cover their ship by insurance for the benefit of all, or is the question of insuring one on which it must be left to the judgment of each individual shareholder in respect of his interest in the ship to say yes or no?—Under the Joint Stock Companies' Act, the directors of a registered company, with the sanction of a majority of shareholders, would be empowered to insure the vessel for the benefit of, and in the interest of, all concerned, and it would not be optional for any individual shareholder to prevent the directors from insuring his share, unless in the Articles of Association, as registered, the company are interdicted from insuring the joint interests collectively.

FREIGHT ON TRANSHIPMENT OF CARGO.—Our agents in America issue bill of lading on our ordinary form for goods at a through rate of freight to be delivered in Rotterdam, ship's responsibility, however, ceasing on arrival in Liverpool, goods being then forwarded to destination at ship's expense, but shipper's risk. The Channel steamer is in collision in the Channel, and is sunk. Under the circumstances, are we not legally entitled to be paid our proportion of the through freight from Baltimore to Liverpool, which we had fairly earned? Consignee says no, and threatens that, if we withhold bill of lading, to enable him to claim his insurance, he will then sue us for his goods on his *Ocean* bill of lading, and that our consequent declaration of what has become of his goods will be quite sufficient for his underwriters. Being uninsured, have we no recourse for the recovery of any part of our freight? The freight from Liverpool to Rotterdam was paid on signing of bill of lading.—The contract of conveyance rests on the conditions expressed in bill of lading. A certain number of hogsheads were shipped by the vessel, at Baltimore, at a through rate of freight to Liverpool, and from thence "to be forwarded to the Port of Amsterdam at steamship's expense and shipper's risk." The freight for the whole voyage was to be paid at Amsterdam, "immediately on landing the goods." The risks enumerated were perils of the sea, and not loss of freight. There was an entire contract as regards the delivery of the goods and payment of freight; and as it has been held, in many actions in superior courts, that freight is only due on right and true delivery, there was no freight earned in this instance, as the goods were not carried to their destination within the terms of the agreement. The original contract, therefore, not having been performed, no claim can arise under it for the carriage between Baltimore and Liverpool. The freight, not having been earned, is not due. In an action in the Common Pleas, June 10, 1840—"Crozier v. Smith"—reported in *Shipping and Mercantile Gazette*—where a vessel was chartered for a voyage out to the Spanish Main and home to the United Kingdom, with liberty to make an intermediate passage, the

payment of freight for the intermediate passage was held as not maintainable as a separate debt, before the contract to bring a cargo to the United Kingdom was completed. In an agreement which does not stipulate for payment of freight *pro rata itineris*, no portion can be recovered until the whole is due.

THAMES PILOTAGE.—Is a Spanish schooner, coal laden from Cardiff, subject to compulsory pilotage up the Thames? She came from Gravesend to Erith with a pilot, and one came on board at Erith and took charge, and has taken the whole of the pilotage from Gravesend.—If the Spanish steamer, when on a coasting trip from Cardiff to London, took on board an unlicensed pilot, the licensed pilot would be entitled to supersede him, whether the ship was exempt in the Thames or not. If the pilot did not offer his services at Gravesend, he would only be entitled to the pilotage proportional rate from Erith.

ACCIDENT ON SHIPBOARD.—In April last, a seaman was killed on board a steamer by the falling of a block from the mast. At the inquest the jury returned a verdict—"That the broken link was defective in make."—The owner of the vessel offered his widow a small sum, which she could take or leave. Having three children to support she took it. Is the owner liable for any more?—Unless negligence can be proved against the shipowner, or that due care was not exercised in the furnishing of the ship with suitable blocks, "the widow" would not have any claim for compensation for the loss of her husband. The shipowner may have purchased the block from a respectable firm, and, had he stood under it himself, might have been killed. If, however, the link hook which broke was defective, within the knowledge of the shipowner, or his servants, or the defect in the iron could have been seen, and the negligent use proved, "the widow" could recover damages.

MASTER'S WAGES.—A correspondent submits the following case:—"I was engaged to serve as master, in December last, on a voyage to the Mediterranean, or to any port or ports wherever employment may offer, and back to a final port of discharge in the United Kingdom. After arriving at the port of discharge, in the Mediterranean, and completing the discharge of the outward cargo, vessel ballasted, and ready to proceed to a loading port to load for the United Kingdom, the owner of the vessel reached the port of discharge before the vessel sailed, and stated that he had come out to take command and complete the voyage to the United Kingdom, himself dismissing me from command, without giving any cause whatever. It is now three months since I first arrived in England, having come overland. Cannot I claim the amount of my wages up to the time of the ship's arrival in England, and expenses incurred for my passage home; also so much per week in

lieu of board for the same length of time, unless I should succeed, in the meantime, in obtaining another vessel; and in the event of obtaining another vessel before the arrival in England of said vessel, then up to the time of my entering upon the new command?"—If our correspondent can prove wrongful dismissal, he may enter an action for the same, and the Court, in estimating the damages, would probably give him wages and expenses up to the end of the voyage, or to the time of securing other employment.

WRECKED CREW.—Are the crew of a vessel, wrecked abroad, to be sent home at the expense of the late owner, or by the British Consul?—Under section 211 of the Merchant Shipping Act, 1854, consular officers are to provide for the subsistence and passage home of shipwrecked seamen, and the amount due in respect of such allowance is to be paid out of any monies advanced by Parliament for the relief of distressed British seamen. "If any seaman or apprentice belonging to any British ship is discharged or left behind at any place out of the United Kingdom, without full compliance, on the part of the master, with all the provisions in that behalf in this Act contained . . . becomes distressed, and is relieved, the wages (if any), subsistence, and passage home, shall be a charge upon the ship."—(Section 213.) "All powers of recovering expenses incurred with respect to distressed seamen, which by the 213th section of the Act of 1854 are given to the Board of Trade, shall extend to all expenses incurred by any foreign Government for the purposes aforesaid, and repaid to such Government by Her Majesty's Government, and shall likewise extend to any expenses by the conveying home such seamen or apprentices in foreign as well as British ships"—(18th and 19th Vic., cap. 91, sec. 16). It would appear from the reading of the sections in these two statutes, that, if a ship is wrecked in a foreign port, and the master complies with the provisions of the law with respect to the ship's papers and depositions to be left with the Consul, and the seamen are found in distress, the cost of subsistence and passage home would have to be paid out of the monies voted by Parliament. Distress seamen are, therefore, to be relieved "and sent home at the public expense." The Board of Trade, as the Executive department under the Act, are competent to decide the question as to whether the seamen were "found abroad" in distress. (See sec. 22 of the Merchant Shipping Amendment Act of 1862.)

CHARTER-PARTY.—I chartered my vessel, which carries about $9\frac{1}{2}$ keels, with a promise that I should be loaded in a fortnight, but sure to be loaded within three weeks. Finding that the merchant would not load my vessel according to promise I spoke to him about it, and he told me to look to my charter. I did so, and find the following clause inserted in it:—"It is further agreed that the charterer or agent is not liable

for any detention the vessel may experience in loading, from whatever cause." I did not notice the above printed clause in my charter when I signed it. Can I come upon my merchant for recompense, as my vessel is not loaded in the time verbally agreed upon? How have I to act in this case?—In the action of "Milvain v. Perez," in the Court of Queen's Bench, January 18, 1861, and in "Ingoldsby v. Yglesias," reported in the *Shipping and Mercantile Gazette*, where a contract was made of the character mentioned, it was held to exonerate the charterer and agent from all liability; but in the case of "Wake v. Harrop," Exchequer Chamber, May 17, 1862, reported in the *Shipping and Mercantile Gazette*, as also in "Pym v. Campbell," and "Davies v. Stambank," an equitable plea was held to be an answer to the charter-party, on the ground that, before entering into the contract, there was a verbal understanding between the parties.

PROMPT DISPATCH.—The liberator, was chartered to load a cargo of 180 tons of coal in Glasgow, for Belfast, with the following clause in Charter:—"To be loaded with prompt dispatch." Vessel was detained seventeen days loading. Do you consider the above time in accordance with charter; and, if demurrage is due, how many days is ship entitled to?—The cargo should have been ready when the ship was on turn; and any detention over two days from the time the charterer's agent was notified of her being at the command of the hirer to load should count on demurrage.

DISRATING A STEWARD.—A correspondent asks—Can a shipmaster send forward to do sailor's work a young man who has signed for steward only, on the grounds of inability or drunkenness; and can the owners of ship demand the allotment note to be returned (in the above case) upon which money has for several months been duly paid? And is answered:—A master can disrate a steward on complying with the statute as regards entering the particulars in the log-book, and reading the accusation to the offender. If a steward, so disrated, subsequently refused to do ordinary work on board, it would rest with a magistrate to disallow wages. In the absence, however, of the master of the ship and the person charged with inability and drunkenness, the payment of the allotment money would be enforced. The same correspondent subsequently states that the circumstances of the above case were not fully explained, and puts his question in the following form:—A young man, who has for some years been engaged as steward in various trades to the satisfaction of masters, ships in a vessel as steward bound to India, and half-pay to be payable at home. On arrival in India the steward is sick, and unable to perform his duties, and has to go to the hospital. On recovering a little, he goes back to his ship, but, being very weak, is unable to perform his duties satisfactorily. The master maintains that

he has been drinking and not qualified to do his duty, and puts a man in his place, at the same time ordering the steward forward to do sailor's work, which duty he is unable to do, not only from weakness, but also from not having ever done sailor's work. He refuses to work forward, on the grounds that he only signed for steward and was unable to perform the work requested by the master. The result is (the ship being still abroad) the master has written the owners in England to stop paying the monthly allotment; that he has sent the steward forward. Can they really do this? The owners also request the allotment note to be returned merely as a receipt for money paid. The editor of the *Shipping and Mercantile Gazette* replies that the correspondent has added nothing new to affect the previous reply. If the man has not left the ship or is not dead, the allotment note must be paid. No magistrate can entertain the question of disrating in the absence of the parties.

MARITIME LAW.

WAGES.—THE "SIMODA."—The cook and steward of the *Simoda* sued the master of that vessel to recover balance of wages due to him, but deducted for alleged incompetency. The plaintiff's principal defect appeared to have been dirtiness, and as the defendant never told him he should disrate him, and did not read the log to him until he arrived nearly in the docks, the Court did not consider the incompetency proved, and ordered payment of the amount claimed with costs.—Thames Police Court.

UNSEAWORTHINESS.—THE "PETREL."—In this case, seven of the crew of the *Petrel* (s.), bound from London to Singapore, left the vessel at Poole, where she put in, alleging she was unseaworthy. The men were apprehended under a warrant, and liberated on their own recognizances, the magistrates directing that the vessel should be inspected by the Board of Trade surveyor at Southampton. On the men appearing to their recognizances, the Mayor read the report of the surveyor, which stated that the steamer was too deeply laden, the deck was insufficiently protected, the house on deck too large and insecure, and the forecabin too small for the crew. The prisoners were discharged, and the master of the vessel was ordered to pay the cost of the inspection and the Court expenses.—Poole Police Court, Sept. 6.

DEFICIENCY OF CARGO.—THE "SALINA."—CUNNINGHAM v. MERSEY DOCKS AND HARBOUR BOARD.—This was an action for the recovery of the value of 60 tons of guano deficient upon a cargo of 1,632 tons of phosphate, ex *Salina*, warehoused in the defendant's warehouse at the Great Float, Birkenhead. On taking delivery of the cargo the plaintiffs found upwards of 60 tons deficient. This the defendant attributed to evaporation

and loss during manipulation. The plaintiffs contended that the alleged loss through evaporation was impossible, and that the cargo must have been misdelivered, as a cargo of this kind being very dry would, if anything, have increased in weight. Witnesses were called to prove that cargoes of this description frequently lost weight by evaporation, but the jury found for the plaintiffs in respect of 44 tons, damages £291 10s.—Liverpool Assizes, August 22.

PERSONAL INJURIES IN DOCK.—**ROBERTS v. MERSEY DOCKS AND HARBOUR BOARD.**—**DIGNEY v. THE SAME.**—These were actions to recover damages in respect of injuries sustained through the improper filling of certain sacks of corn, forming portion of the cargo of the *Republic*. It appeared that the sacks had been raised up in a heap twenty feet high, and placed at the side of Waterloo Dock, without the precaution being taken of tying the outer row of sacks one with another, so as to prevent them from bulging outwards, and allowing the inside sacks to tumble down. The plaintiff Roberts was loading a lorry close to the edge of the sacks, and, whilst standing in the lorry, some of the sacks fell, breaking his leg and injuring him severely. The plaintiff Digney, who had gone to the Dock for the purpose of examining some cotton, was passing between Roberts' lorry and the pile of sacks, when the latter fell upon him, nearly smothering him, dislocating his shoulder, and injuring his eyesight. It was contended for the Dock Board that the sacks were piled in the ordinary way, and that what happened must be considered a pure accident, and in no way attributable to the negligence of the defendants' servants. The Judge, in addressing the jury, asked them how the pile came to fall down if it were properly made. The jury found for the plaintiffs, giving Roberts £150 and Digney £50.—Liverpool Assizes, August 20.

BOARD OF TRADE INQUIRIES ABROAD.

80. *Haidee*, of Kingston, Jamaica, stranded off Inagua Island, 27th June. Inquiry held at Inagua, before J. N. Brown, Esq., J.P., and W. Prudden, Esq., nautical assessor. Master exonerated. Casualty the result of thick weather.

81. *Americana*, in collision in Aden Harbour, 24th April. Inquiry held at Aden, before C. W. Tremenheere, Esq., resident, and W. F. Prideaux, Esq., assistant resident. Master exonerated. Casualty the fault of the other vessel.

82. *Parthenon*, stranded at Vourla, 1st August. Inquiry held at Smyrna, before R. W. Cumberbatch, Esq., H.M. Consul, R. Hadkinson, Esq., merchant, F. G. Cumming and J. W. Read, master mariners. Master in default. Certificate suspended for twelve months.

83. *Norwood*, of London, stranded at Bombay, 20th March. Inquiry held at Bombay, before J. Connan, Esq., magistrate, and C. Eastley, master mariner. Casualty, the result of carelessness and neglect. Master and chief officer reprimanded; pilot dismissed the service.

84. *Lorton*, stranded near the Goulon Island, 3rd April. Inquiry held at Manila, before G. T. Ricketts, Esq., H.M. Consul, F. Fagg, Esq., surveyor, and A. Bley, master mariner. Casualty the result of not ascertaining the distance from land. Master severely reprimanded.

85. *South Easter*, of Glasgow, stranded east of the Buffalo River, 29th June. Inquiry held at East London, before A. R. Orpen, Esq., resident magistrate, and G. Walker, Esq., harbour master and nautical assessor. Master exonerated. Casualty occurred through stress of weather.

86. *Miako*, of London, lost mizen and topmast 25 miles S.S.W. of Cape St. Francis, 24th June. Inquiry held at Port Elizabeth, before A. Wylde, Esq., resident magistrate, and F. Skead, Esq., nautical assessor. Master exonerated. Casualty the result of stress of weather.

87. *Lily* stranded on Cape Jaffa Reef, 12th January. Inquiry held before the South Australia Marine Board. Master in default. Want of precaution. Certificate suspended for twelve months.

88. *Dover Castle*, burnt off Coquimbo. Inquiry held at Coquimbo, before Captain F. A. Hurm, R.N., President, H. Cosgrove, Esq., Acting Consul, R. W. Thornton, R.N., and Captain J. A. Morton, master mariner. Master in default in abandoning ship before absolutely necessary, and taking no pains to save cargo. Certificate suspended for six months.

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CHARTS, ETC., PUBLISHED BY THE HYDROGRAPHIC OFFICE, ADMIRALTY,
in September, 1872.

No.	Scale.		a.	d.
983	d = 2·0	Pacific, Marshall islands	1	0
984	m = { 0·65 } { 4·8 }	Pacific ocean, Marshall islands, Wotje or Romanzoff islands, with plan of Port Rhia	1	0
992	m = 2·0	Japan, Yezo, east coast, Akishi bay	1	6
991	m = { 1·7 } { 4·0 }	Japan, Yezo, Notske bay, and Nemoro anchorage	1	6
2282	d = 1·5	Arctic ocean and Greenland sea	2	6
273	m = 5·0	Newfoundland, St. Lunaire bay	1	6
985	m = 1·0	South Pacific, Minerva reefs, with enlarged plan of Herald bight	1	0

MONTHLY ABSTRACT OF NAUTICAL NOTICES,

No.	PLACE.	SUBJECT.
161	NORWAY—Christiania Fiord—Torbiørnskiær	Establishment of Light.
162	AFRICA—South-east Coast—St. John River	Position of Bismarck Rock
163	UNITED STATES—Maine—Burnt Coat Harbour	Establishment of Leading Lights.
164	UNITED STATES—Chesapeake Bay—Hampton Roads	Establishment of a light on the Thimble Discontinuance of Willoughby Spit Light.
165	UNITED STATES—Croatan Sound—Roanoke Marshes	
166	MISSISSIPPI RIVER—Pass à L'Outre and South West Pass	Establishment of Fog Signals.
167	ENGLAND—East Coast—Harwick Harbour	Alteration in Buoyage.
168	UNITED STATES—Washington Territory—Cape Flattery Lighthouse	Establishment of a Fog Signal.
169	UNITED STATES—California—Humboldt Bay	Bell Boat off Bar.
170	UNITED STATES—Maine—Segula Lighthouse	Establishment of Fog Signal.
171	FRANCE—South Coast—Gulf of Foz—St. Louis Canal	Establishment of a Light.
172	GULF OF MEXICO—Vera Cruz	Establishment of a Light.

NAUTICAL NOTICES.

161.—NORWAY.—*Christiania Fiord.—Torbiørnskiær.*—In accordance with Notice No. 188, a *fixed white* light, varied by a *red flash* of one and a half seconds duration every minute, is now exhibited. It is of the third order, elevated 90 feet above the sea and should be seen 15 miles. Position, lat. $58^{\circ} 59\frac{3}{4}'$ N., long. $10^{\circ} 47\frac{1}{2}'$ E. In thick or foggy weather, a bell will be sounded every minute with five strokes in rapid succession.

162.—AFRICA.—*South-east Coast.—St. John River.*—In reference to Notice No. 69, respecting Bismarck rock, information has been received that it lies only one-sixth of a mile from the shore, and E. $\frac{3}{4}$ N. $2\frac{1}{10}$ miles from Cape Hermes, and has only 6 feet water on it at low water springs, with deep water between it and the shore. Also that between the Bashee and Umkornass rivers, the coast is fringed with outlying rocks varying from one to five cables from the shore.

163.—UNITED STATES.—*Maine.—Burnt Coat Harbour.*—Two beacon lights have been established at the entrance of Burnt Coat harbour, Swan island. The lights are *fixed white* lights, and bear from each other N.E. $\frac{3}{4}$ N. and S.W. $\frac{3}{4}$ S., 100 feet apart. The southern light is of the

fifth order, elevated 42 feet above the sea, and is exhibited from a brick tower 17 feet high. The northern light is of the fourth order, elevated 75 feet above the sea, and is exhibited from a brick tower 32 feet high. The approximate position is lat. $44^{\circ} 8' N.$, long. $68^{\circ} 27' W.$

Directions.—Entering the harbour, bring the lights in line bearing N.E. $\frac{3}{4}$ N., and when near the southern light, steer E. by N. a quarter of a mile to the anchorage. Six fathoms water can be carried in. Burnt Coat harbour is a good harbour of refuge, and can afford shelter to a large number of vessels.

164.—UNITED STATES.—*Chesapeake Bay.*—*Hampton Roads.*—A fixed white light, varied by red flashes every half minute, of the fourth order, elevated 44 feet, and visible 12 miles, will be exhibited on the 10th October from a screw-pile lighthouse on that part of the Horse-shoe bank, known as the Thimbles, entrance to Hampton roads. The lighthouse stands in 11 feet water, and is E. by N. $\frac{1}{4}$ N., distant $8\frac{1}{4}$ miles from Old Point Comfort lighthouse.

In foggy weather and snow storms a bell will sound at intervals of five seconds.

Note.—Vessels going into Hampton roads must pass to the southward of the light, between it and the black buoy of Willoughby Spit.

From the same date, the light exhibited from the light-vessel off Willoughby Spit will be discontinued and the light-vessel removed.

165.—UNITED STATES.—*Croaton Sound.*—*Roanoke Marshes Light.*—This light has been changed from a fixed white light to a fixed red light.

166.—UNITED STATES.—*Mississippi River.*—*Pass à L'Outre and South West Pass Lighthouses.*—Fog whistles have been established at these lighthouses which in thick or foggy weather will sound as follows:—

Pass à L'Outre.—Blasts of fifteen seconds with intervals of forty-five seconds.

South-west Pass.—Blasts of five seconds with intervals of five, and forty-five seconds alternately.

167.—ENGLAND.—*East Coast.*—*Harwich Harbour.*—The following alteration has been made in the buoyage, viz:—

Andrews Buoy has been moved S.E. $\frac{1}{2}$ S. $\frac{1}{10}$ of a cable.

South Shelf Buoy has been moved one cable to the eastward.

North Shelf Buoy has been moved S.E. $\frac{1}{2}$ S. one cable.

Guard Buoy now lies in four fathoms with the Coast Guard flagstaff in line with the tall chimney W.S.W. and North Shelf buoy S.E. $\frac{1}{2}$ S. $3\frac{1}{2}$ cables.

The red shade of Land Guard light and the beacons on the point have been altered to correspond with the above changes.

168.—UNITED STATES.—*Washington Territory.*—*Cape Flattery Lighthouse.*—From the 1st November, in thick and foggy weather, a steam

fog-whistle will be sounded in blasts of *eight seconds* duration, with intervals of *fifty-two seconds*.

169.—UNITED STATES.—*California*.—*Humboldt Bay*.—A bell boat has been moored in 16 fathoms off the bar, with Humboldt light bearing E. $\frac{1}{4}$ N. 2 miles, and Red bluff S.E. by E. $\frac{3}{4}$ E. The bell should be heard from a distance of about three-quarters of a mile depending on wind and sea.

170.—UNITED STATES.—*Maine*.—*Sequia Island Lighthouse*.—In thick and foggy weather, a steam fog-whistle will sound in blasts of *eight seconds* duration, with intervals of *fifty-two seconds*.

171.—FRANCE, SOUTH COAST.—*Gulf of Foz*.—*St. Louis Canal*.—A *fixed white* light (obscured in the direction of the shoals at the mouth of the Rhone river), elevated 43 feet above the sea, and visible ten miles, is now exhibited from the eastern extremity of the southern jetty of St. Louis canal in lat. $49^{\circ} 23\frac{1}{2}'$ N., long. $4^{\circ} 52\frac{1}{4}'$ E. The lighthouse is painted brown.

172.—GULF OF MEXICO.—*Vera Cruz*.—A *fixed and flashing white* light, showing a *flash every minute*, is now exhibited from the old convent of San Francisco, in the city of Vera Cruz. It is elevated 102 feet above the sea, and should be seen 15 miles. The tower is $5\frac{1}{2}$ cables S.S.W. $\frac{1}{2}$ W. from the old light in the castle of San Juan de Alloa. Position, lat $19^{\circ} 11\frac{1}{2}'$ N., long. $96^{\circ} 9'$ W.

ROYAL NAVY AND ROYAL NAVAL RESERVE.

Abbreviations.—Ad., Admiral; A., Assistant; C., Captain; Cr., Commander; C. Chief; Cl., Clerk; Ch., 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.

PROMOTIONS.—**C**.—Algernon G. Wootton, 1864; Archibald G. Bogle, 1865; Joseph E. M. Wilson, 1865; Richard M. Blomfield, 1866. **Cr**.—John H. Vidal, 1860; Robert S. Hunt, 1860; Francis S. D. Broughton, 1860; Capel Wodehouse, 1861; John Ingles, 1862; P. R. H. Parker, 1864. **L**.—Charles H. Robinson, 1868; John G. F. Kerr, 1868; John Masterman, 1868; Scott J. B. Willcox, 1868; Francis E. Haigh, 1868; William D. Morrish, 1868; George M. Mansel, 1868; Charles B. Neate, 1868; Hon. Henry N. Shore, 1868; Aston E. McMurdo, 1868; William L. H. Browne, 1868; Reginald O. B. C. Brenton, 1868; Edward J. Fellowes, 1868; Horace H. Barnard, 1868; Charles J. Barlow, 1868; Frederick Maitland, 1868; William G. Carrow, 1868; Sydney A. Roberts, 1868; Frederick S. Pelley, 1868; Horatio N. Dudding, 1868; William J. Moore, 1868; Pierre G. Evans, 1868; Arthur C. Jenner, 1868; George T. Temple, 1868; Charles W. Last, 1868; Herbert G. Archer,

1868; George R. Bethell, 1868; David L. Dickson, 1868; John D. Deane, 1868; Carleton Tuffnell, 1868; Arthur S. Hamilton, 1868; John P. Ripon, 1868; Ronald R. M. Hall, 1868; Robert W. Craigie, 1868; Christopher G. Williams, 1869; Henry D. Mackenzie, 1869; Edward H. Gamble, 1869; Charles H. Herring, 1869; Vernon A. Tisdall, 1870; James E. C. Goodrich, 1870; F. H. E. Crowe, 1869; Hon. A. G. Curzon-Howe, 1870; A. R. Woodrowe, 1870. **D. I. G. H. F.**—W. Loney, M.D., 1863. **P.**—W. E. P. Saer, F. B. Williams, C. H. Stone, W. B. Ramsey.

APPOINTMENTS.—**Ad.**—Rear-Admiral A. C. Key, C.B., to hoist his flag in the *Fisgard*, for special service. **C.**—Benjamin S. Pickard, 1863, to *Revenge*; Sholto Douglass, 1865, to *Aurora*; Thomas B. M. Sullivan, 1867, to *Malabar*; Robert O'B. Fitzroy, 1872, to *Minotaur*. **Cr.**—Charles L. Oxley, 1872, to *Revenge*; Hon. James T. Fitzmaurice, 1867, to *Teazer*; Alfred F. Marescaux, 1868, to *Achilles*; J. A. F. Luttrell, to *Woodlark*; T. H. Royse, 1868, to *Hart*; H. J. F. Campbell, 1870, to *Black Prince*; R. L. Turton, 1871, to *Favorite*. **St. Cr.**—Alexander Brown, 1867, to *Pembroke*. **L.**—Sebastian Gassiot, 1863, to *Favorite*; John Hext, 1865, to *Revenge*; John Hope, 1864, to *Ariadne*; Walter P. A. Ogle, 1871, and Thomas Suckling, 1867, to *Excellent* (additional); George S. Deverell, 1872, and William H. G. Nowell, 1867, to *Cambridge*; William Neilson, 1866, to *Repulse*; Charles G. Michaelson, 1871, to *Northumberland*; Frederic T. Pelly, 1872, to *Repulse* (additional); Lindesay G. P. Goodrich, 1868, to *Black Prince*; Robert R. Clements, 1868, to *Jumna*; A. H. H. S. Mercer, 1871, to *Royal Adelaide*; G. N. A. Pollard, 1871, to *Penelope*; W. Mc. F. Castle, 1866, junior staff officer, to *Hercules*; L. G. A. Roberts, 1866, junior staff officer, to *Cambridge*; J. Ferris, 1872, and C. E. W. H. Hutton, 1872, to *Cambridge* (additional); C. L. Rooke, 1869, to *Jumna*; J. S. Luckraft, 1867, to *Jumna*; O. P. Tudor, 1866 (for gunnery), and C. G. G. Craufurd, 1871, to *Favorite*; F. H. S. O'Brien, 1866, to *Implacable*; W. T. Morgan, 1866, to *Jumna*; F. Gaskell, 1866, to *Egmont*. **N. L.**—Albert R. Worham, 1867, to *Thetis*; W. J. Symons, 1871, to Royal Naval College, for study. **S. L.**—Scott J. B. Willcox, and Phillip E. Cresswell, to *Duke of Wellington*; William Q. Johnston, to *Lord Warden*; G. M. Brooke, J. Brant, C. Windham, H. D. Law, E. J. Trafford, D'Arcy M. R. Read, E. F. Creagh, to *Hercules*; C. Taylor, A. A. Taylor, to *Duke of Wellington*; H. J. Edgar, to *Duke of Wellington* (as supernumerary); F. G. Jones, to *Minotaur*; F. H. Logan, J. W. Osborn, G. R. Lindley, H. C. Kenyon-Slaney, to *Agincourt*; C. W. P. Bouverie, and G. F. Raggett, to *Pembroke* (as supernumeraries); H. J. Edgar, to *Clio*; G. Hungerford, to *Lively*. **N. S. L.**—Arthur Havergal, to *Duke of Wellington*; George C. Hammond, to *Shearwater*. **M.**—Hon. Walter

G. Stopford, to *Lord Warden*; Lionel A. W. Barnes, to *Minotaur*; James G. Duborley, Henry R. P. Floyd, Walter Grey, Charles B. Macdonald, Hastings G. F. Berkeley, and Richard S. Thompson, to *Agin-court*; A. K. Du Pré, to *Minotaur*; W. M. Murdock, J. S. De Beauvoir Yelloly, and J. A. Colwell, to *Hercules*; J. T. White, O. Young, C. W. Thomas, W. F. Forrest, and J. Gibbings, to *Agin-court*; H. M. V. Hughes, to *Hercules*; J. E. Ede, to *Minotaur*. **N. M.**—George G. King, to *Orontes*. **C. E.**—P. T. Gruchy, 1865, to *Indus*, for *Defence*; J. Carlisle, 1861, to *Crocodile*. **Cn.**—Rev. Stephen S. Browne, 1872, to *Glasgow*. **D. I. G. H. F.**—H. J. Domville, C.B., M.D., 1864, to Plymouth Hospital. **Sn.**—Edward H. Evans, 1862, to *Nankin* (for temporary service); W. J. Eames, 1863, to *Pembroke* (for Sheerness Dockyard). **A. Sn.**—T. Kipling, 1859, to *Pembroke* (for service with Reserve); J. Wilson, 1866, to *Terror*. **A. P.**—John B. Sams, 1868, to *Ariadne*; Frederic H. Page, 1866, to *Terror*; Charles P. Skinner, 1864, to *Black Prince*; Edgar Radford, 1869, to *Revenge*; John Barwick Sams, 1868, to *Ariadne*; William Wykeham Percy, 1868, to *Lord Warden* (as interpreter); G. J. Mills, 1866, to *Defence*; C. de B. Stewart, 1869, to *Northumberland*; G. Mills, 1866, to *Excellent*.

RETIREMENTS.—**C.**—Alan H. Gardner, C.B., 1856; S. C. Greville. **St. Cr.**—Richard Sturgess, 1867, with rank of Commander. **L.**—Francis Chalmer, 1872. **N. L.**—Henry Aguilar, 1863; W. H. Purvis 1866. **S. L.**—S. F. Dashwood, 1869. **N. S. L.**—George Horwood, 1835. **C. E.**—Samuel Madden, 1856. **Cn.**—Rev. H. Hind. **A. Sn.**—Charles McConaghy, 1867. **P.**—S. J. Spark.

DEATHS.—**A.**—H. T. B. Collier, 1863, *r.*; H. O. Love, 1869, *r.* **Cr.**—John Kempe, 1865, *r.*; W. C. Cambier, 1865; J. Hay, *r.*; G. Boolan, 1865; S. S. Skipwith, 1856, *r.* **L.**—George N. Smallpiece, 1863; Henry A. Arundall, 1862; Charles E. Napier, 1867. **N. M.**—H. F. P. Sill. **D. I. H. F.**—Robert Bernard, M.D., B.A., 1865. **A. Sn.**—Thomas B. Forster, M.D., 1847, *r.* **A. P.**—Edmund G. Ellis, 1864.

SIGNALS.—**PILOTAGE AND DISTRESS.**—The Board of Trade have for a long time been in communication with shipowners and with the public departments, with a view to establishing certain signals to be used by ships in distress, and by ships wanting pilots. They have, with great care, ascertained full particulars of the signals made at night by the ships of private companies (chiefly by a combination of rockets and blue lights), and they have framed a set of rules to establish signals which, whilst they interfere with no existing signals, are in themselves simple and unmistakable. The Admiralty and the Trinity House, and all public

bodies and companies with whom they have corresponded, agree as to the necessity for authorised signals of distress, and the question has been so far narrowed that there only remained one or two points to settle by conference. This was done at a meeting at the Board of Trade, consisting of Captains Were and Weller, elder brethren of the Trinity House; Mr. J. Hart, of the Pilotage Department of the Trinity House; Captain Simpson, Superintendent of Pilotage at Liverpool, and Captain Wilson, of the Mersey Docks and Harbour Board; and Admiral Bedford, and Mr. Gray, of the Board of Trade. At this meeting it was unanimously agreed that it would be well if rules were made as given below. It was proposed that these rules should be printed in draft, and circulated at an early convenient opportunity, with a view to careful consideration and subsequent embodiment in the Merchant Shipping Code Bill. The draft rules agreed to, were,—1. *Signals to be made by Ships wanting a Pilot.* That the Signals be—(a.) *In the daytime.*—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. (b.) *At night,*—(1) 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.—2. *As regards Signals of Distress.* (a.) *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 Commercial 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. (The Ensign Union down has been advisedly omitted, because many foreign flags are the same whether right side or wrong side up; and because it is hoped that the signals now suggested may become international.) (b.) *At night.*—The following signals, numbered 1, 2, 3, and 4, 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 of any colour or description, fired *one at a time* at intervals of about five (5) minutes. 4. Blue lights, burned *one at a time* at intervals of about five (5) minutes.

SIMPLIFICATION OF MR. TOWSON'S RULES FOR TIME
AZIMUTH PROBLEM.

A VERY excellent paper, having the above title, and written by Mr. Bolt, appears in the "Mercantile Marine Magazine" for September.

Referring to the Diagram therein given, I think the investigation of the Formula might be improved thus:—From S draw a perpendicular P R on Z P; then using the well known analogy, the Sines of the segments of the base are inversely proportional to the tangents of the angles at the base, we have— $\sin Z R : \sin P R :: \tan P : \tan Z$. But $S R = x$, and $Z R = 1 - x = 90^\circ - 1 - x = 90^\circ - (1 + x)$, therefore $\cos (1 + x) : \sin x :: \tan P : \tan Az$; from which the Formula is at once deduced.

But to use this Formula, Mr. Towson's Tables would be required to be changed. I therefore suggest that the Tables should be retained, but the following set of Rules substituted for those given by Mr. Towson.

RULES.

1. Arc I is found from Mr. Towson's Table for it: with the exception that the Arc thereby found must be subtracted from 180° , when one and only one of the two quantities—viz., the Polar distance and the Horary angle is greater than 90° .

NOTE.—To apply this rule it is not necessary to find the Polar distance actually: because we know that it must be less than 90° , when the Declination and Latitude are of the same name; but greater than 90° , when they are of opposite names.

2. For Arc II, take the difference between Arc I and the Latitude in all cases.

3. The Azimuth is always taken less than 90° , the same as by Mr. Towson's Rule.

4. The general Rule for naming the Azimuth is to reckon it from the same name as the Declination, and towards the E. or W., according to the common Rule.

But there is one exception—viz., when Arc I is less than 90° , and is at same time greater than the Latitude: in which case the Azimuth must be reckoned from the opposite name to that of the Declination.

NEW DEVIATION PROBLEM.

This is a variety of the common "Time Azimuth Problem." In it, there are given the Latitude of the ship, the true Altitude, the Declination, and the Horary angle: that is the Data are the same as before; but in addition thereto, the true Altitude is also given.

I have given an easy Rule to solve this Problem, in my "Marine Board Catechism," at page 18 of Part II. The following is a modification of that Rule :—

1. Add together the Log. Cosecant of the Horary angle, the Log. Secant of the Declination (or the Log. Cosecant of the Polar Distance), and the Log. Cosine of the true Altitude : rejecting 10 from the index of each of the first two Logarithms. The sum is the Log Cosecant of the true Azimuth.

NOTE.—If the Tables used are those of Norie, the Log. Cosecant may be taken from Table XXVII., to save the trouble of reducing the time into arc.

2. The true Azimuth is to be reckoned from the same name as the Declination, excepting in one case.

The excepted case is

when the given Horary angle is less than the Horary angle when the object comes to the Prime Vertical.

Note 1. This only happens when the Declination and the Latitude are of the same name, and the Declination less than the Latitude. The Horary angle for the Prime Vertical can be easily ascertained from Norie's Table XLV., by inspection. It is not necessary to take this angle exactly; because the Azimuth should not be taken so near the time of passing the Prime Verticals as to cause any doubt as to its relative size to the given Horary angle.

Note 2. Rule 2 also applies to the excepted case of the common Time Azimuth Problem.

REMARKS.

1. The above Rules are directly deduced from the well-known analogy: the Sines of the sides of a spherical triangle are proportional to the Sines of the opposite angles.

2. I call it *New*, because I do not know of any author who has reduced it to practice as I have done. At all events it seems to have been entirely forgotten; otherwise, such Tables as those of Mr. Towson and others would not have been proposed to solve the Problem. For this reason, I think the term *New* is appropriate, as it distinguishes it from the common Problem now in use. My humble opinion is that practical navigators would prefer to add three Logarithms to the use of any of the Tables referred to.

3. It has been objected to this *New* Problem, that it is not applicable when the Altitude cannot be observed. This is, however, only a theoretical objection; because, in practice, the observer can easily wait for his opportunity to obtain both the Altitude and Azimuth; it is, therefore, unnecessary to force practical navigators to use Problems which occasion additional trouble: their attention is sufficiently occupied with absolutely necessary duties.

If the New Problem is used while swinging a ship, and the Altitude cannot be observed on board, it can be taken by the Assistant on shore.

4. There is, however, a very simple but important fact which is not sufficiently impressed on the notice of Mariners—viz., that when any celestial body is on the Meridian its true bearing is either due N. or due S. Consequently, if its Azimuth can then be observed, this will be the Error of the Compass.

This is particularly useful in the case of the Pole Star in low Latitudes.

But in all cases some known star may be found to suit the purpose. Consequently, it may be affirmed generally that, on a long voyage, there is no absolute necessity for making any calculation to find the Error of the Compass. And by varying the ship's course at the time of observing the Meridian-Azimuth, the Deviation on all courses may be repeatedly verified.

JAMES GORDON.

Morden College, Blackheath, S.E., London,
15th September, 1872.

WATCHING FOR WRECKS.

To those enterprising literary gentlemen who think nothing of spending a night in a workhouse among the casuals, or alone on the top of the monument, or of crossing to America as a steerage passenger for the purpose of recording their sensations for the good of their fellow-men, we would suggest that they should try an experience of six months watching for wrecks either at the little settlement of Somerset in Torres Straits or on Sable Island, which lies about 85 miles south of Nova Scotia. Less than this time would probably not be sufficient, unless it happened to be an unusually stormy season, or they were particularly fortunate, as wrecks do not occur every day even in those dangerous places.

It cannot be a very exciting or luxurious way of spending one's life. They are both out of the ordinary reach of civilisation, society is almost as limited as in a lighthouse, and communication with the civilised world upon which they are dependent for supplies takes place but two or three times in the year. And, moreover, the country in both places is so unproductive and uninteresting, the prospects of establishing thriving communities so hopeless, and shipwrecked crews, for whose sake only the settlements exist, so scarce, that hours must hang heavy, and life seem

for the most part not only depressing but useless. But as Milton says:—

They also serve who only stand and wait;

and these sentinels of civilisation who spend cheerless years of exile on inhospitable shores for the chance of succouring any still less fortunate fellow-creatures who may be cast destitute upon them, need not fear that their lives are thrown away or their empty hours undeserving of reward.

The history of the establishment on Sable Island is thus given in the Report of the Department of Marine and Fisheries of Canada for 1869:—

“Sable Island lies to the south-eastward of Nova Scotia, distant about 85 miles from Canso, the nearest land, and from Halifax upwards of 150 miles. It consists of a narrow line of sand some 25 miles along, and from one to two and a half miles broad. This breadth encloses a lake some 18 miles long, from which there was at one time a passage to the sea, through which small vessels could pass and find a harbour. This has, however, long since been closed by the shifting sand, and the island has now no harbour whatever. From its two extremities, long sand bars, over which the sea in stormy weather constantly breaks, stretch far out into the sea, one being about 25 miles and the other about 18 miles in extent, and it is on one or the other of these that vessels are most frequently wrecked. The island is so low as to be difficult to make out at any distance in thick weather, and the influence of treacherous currents have carried many a vessel to shipwreck on its sunken bars.

“The first establishment for the relief of persons shipwrecked on the island was formed in the year 1802, and was supported entirely by the province of Nova Scotia. In 1827 the British Government contributed an annual sum of £400 sterling towards its support, and this has been continued until the present time.

“The regular staff of the island consists of a superintendent and fifteen men placed under his immediate control. Supplies are sent to the island every spring and fall. Those in the autumn are furnished in sufficient quantities, not only to cover the ordinary consumption of the island staff, but to provide relief for crews that may suffer shipwreck there during the winter months; the spring supply is therefore varied by the actual consumption of the winter. The island is divided into four stations, called respectively the principal station, the foot of the lake station, east-end station, south-side station. The superintendent resides at the principal station, which is situated on the north side of the island, and his force consists of six boatmen, a teamster, herdsman, and cook. Houses for the superintendent and his family, for the men employed at the station, and for the accommodation of shipwrecked persons, are provided, as well as stores, boat-houses, out-buildings, life and surf boats, &c.

“The ‘foot of the lake,’ east-end, and south side stations, are in charge respectively of an outpost-keeper, and an assistant. Buildings are provided for the accommodation of these men and the property under their charge, as well as for the temporary relief of shipwrecked crews. No one lives at the west-end, it is only five miles from headquarters, and consists of a small house of refuge, containing materials for a fire, and a small stock of provisions.

“It is the duty of the outpost-keepers and their men to keep a strict look-out at their respective localities, and to make stated circuits at certain portions of the island. Should they during these discover anything amiss, or vessels in danger, their duty is to send information and apply for assistance at once to the principal station. At the east-end station a metallic lifeboat is kept, and also a life car to communicate with wrecks by means of hawsers stretched from them to the shore. During clear weather the whole of the island can be seen from a look-out at the main station called the ‘crow’s nest,’ from which point each outpost can be seen and signalled with.

“On foggy days, men are sent from the principal station all round the island, for the purpose of visiting the outposts and watching for any vessels on shore or in danger.

“It has been the custom for many years to send a vessel from Halifax to the island, at stated intervals, as may be considered necessary, to convey supplies, to ascertain the condition of the staff and property, to assist in saving wrecked vessels and their cargoes, and bring from the island shipwrecked crews. During the comparatively calm weather of summer, communication is easy and free from danger; but, owing to the uncertain weather, and frequent storms of spring and autumn, much difficulty is experienced in approaching the island and landing men or supplies, and it has frequently happened to the Government vessel to be in its neighbourhood for weeks together without being able to communicate with it except by signals. The island was visited seven times last year by Government vessels.

“Portions of the island are favorable to the growth of cranberries, considerable quantities of which are brought to Halifax each year, and sold on Government account. The amount received from this source during the last year was \$674 11c. In 1861, in reply to enquiries whether these berries might not be more extensively cultivated, the superintendent of the island, Mr. Dodd, speaks as follows:—

“As a cranberry plantation, the island might be made of much more value than at present, if the quantities of berries could be increased by cultivation, but to me it appears that here, where they grow spontaneously, nature has planted them in the only places where they will thrive. The experiment of transplanting the vines to other parts of

the island could easily be tried, however, and if it succeeded would, no doubt, add much to the value of the island.'

“This island affords most excellent pasturing for cattle, and in this regard is spoken of by Mr. Dodd, in the report from which I have already quoted, in the following terms :—

“As grazing farm I do not think it can be equalled in any part of Nova Scotia, not only on account of the longer summer, and the rich and extensive pasturage, but also from the absence of flies, which are so troublesome and detrimental to the fattening of grass-fed cattle on the main.’”

The cultivation of the cranberries does not appear to have been tried, but stock has been introduced into the island with some success, and the Canadian Government appear to be seriously considering how it is possible to make the island remunerative. Besides the cranberries, the island produces a small hardy race of wild ponies, which sell at Halifax for from \$14 to \$25 each. In 1870 there were three hundred of these on the island, but the unexampled severity of the following winter reduced them to one hundred and forty.

MORECAMBE BAY.

BY STAFF COMMANDER J. RICHARDS, R.N.

Sands and Buoyage.—The following dangers bound the sailing track towards Fleetwood :—

Shell Flat and Oyster Grounds.—Shallow ground extends seaward for the whole distance between the Ribble and the Wyre ; its general shape is triangular ; and the depth of 5 fathoms upon its outer extremity is about 11 miles off shore.

The outer portion of this foul ground, under the name of the Shell flat, has a general depth of $2\frac{1}{2}$ to 3 fathoms over it, the latter depth occurring with the Ribble lighthouse S.E. by S. 10 miles, and Rossall landmark E. $\frac{3}{4}$ N. 9 miles. The inner part of the flat, different portions of which are known as Rossall oyster grounds, Rossall patches, and Boulder banks, is shallow. The northern part of the flat forms the southern boundary of Lune deep, the edge of which is steep, and dangerous from the shallow stony patches lying along it. These dangerous patches extend from King Scar out to the westward for $2\frac{1}{2}$ miles, terminating at the north-western extreme of the Boulder banks above referred to, from whence they trend in a southerly direction for $1\frac{1}{2}$ miles.

On the outer N.W. boulder there is barely 6 feet at low water. This

spot lies with Preesall mill a little open northward of Rossall landmark S.E. by E., distant from the latter $2\frac{3}{4}$ miles. Within this 6 feet rock to the southward, and distant from it $2\frac{1}{2}$ cables, there is only 2 feet at low water. On the highest part of the southern Boulder bank, nearly awash at low water, Fleetwood high lighthouse is in line with Rossall landmark E. $\frac{3}{4}$ S., nearly $2\frac{1}{2}$ miles from the latter.

To clear the outer shoulder of these banks to the southward, bring the town of Fleetwood open a little to the southward of Rossall landmark E. $\frac{1}{2}$ N. They will be cleared outside, or to the westward, by bringing Black Comb Hill in line with or open westward of the South end farm house on Walney island N. $\frac{1}{3}$ E. Wyre lighthouse and King Scar beacon in line E. by N. will lead between the outer boulder banks, and along inside Rossall patches up to the foot of King Scar.

Danger Patch.—Morecambe flats, extending from the body of the sands in the bay, forms the northern boundary of Lune deep. The southern edge of the flats is shallow, but steep-to, the inner and shoalest portions being named Fisher bank and patches, which are nearly awash at low water springs. One of the latter, named Danger patch, has on its apex a rock with only 6 feet over it at low water. On this rock Preesall mill is seen over the town of Fleetwood, and between the high lighthouse at that place and King Scar beacon, bearing S.E. $\frac{1}{2}$ S., distant from the latter $1\frac{3}{4}$ miles.

Danger patch may be cleared inside by bringing Preesall mill in line with or a little open to the north-east of Fleetwood low lighthouse bearing S.E. $\frac{3}{4}$ S.; and Preesall mill in line with Fleetwood church spire, and open southward of the Mount flagstaff, bearing S.E., will clear it to the westward.

Buoy.—A large conical buoy, striped black and white vertically, with staff and cage, is moored in 8 fathoms, rather more than half a mile W. $\frac{1}{4}$ S. from the rock.

Lune Deep, the main channel into Morecambe bay, is a deep hollow between Rossall oyster grounds, and Fisher bank and patches; while the shoals bounding it have only from 3 to 6 feet upon them, their edges dip suddenly so as to increase the depth to 23 and 25 fathoms, and in one place it is 35 and 37 fathoms deep. The channel at its narrowest part is nearly a mile wide; it extends 8 miles to the westward, and 2 miles to the eastward of the pile lighthouse, and the general direction through it is a little northward of East.

North Wharf is the name of the extensive sand-flat lying to the northward of Rossall and Fleetwood. The highest part, near its northern border, is awash a little before half ebb, and at low water the entire flat dries out to $1\frac{3}{4}$ miles from the shore. The north-east corner of the flat is well marked by a pile lighthouse, intended to guide vessels up to the

entrance of the river Wyre, and at its north-west corner there is a rocky bank nearly half a mile in diameter, called King Scar, whose apex, dry at half tide, is marked by a large wooden beacon 50 feet high, and the outer point by a red can buoy in 8 fathoms.

King Scar buoy, just referred to, lies on the line of Fleetwood high lighthouse and King Scar beacon, bearing S.E. $\frac{1}{2}$ S. distant from the latter half a mile, Wyre pile lighthouse E. $\frac{3}{4}$ S. $1\frac{1}{2}$ miles, Rossall landmark South, and Danger patch rock, N.W. $\frac{3}{4}$ N. $1\frac{1}{4}$ miles.

FLEETWOOD.

BY STAFF-COMMANDER JOHN RICHARDS, R.N.

Fleetwood.—The fairway of the entrance of the channel to Fleetwood is marked by a buoy striped vertically black and white, and lying in 4 fathoms N. by W. $\frac{1}{4}$ W., nearly half a mile from the lighthouse.

The general sailing or fairway course up Lune deep hitherto given has been, Lancaster castle church, and mill, open their breadth to the northward of Ingleborough hill, E. $\frac{1}{4}$ N. (view E., Sheet 11); but the hill is seldom seen on account of its distance; a better mark is, Lancaster church tower open northward of Middleton tower bearing E. $\frac{3}{4}$ N.

Black Comb hill near Duddon sands, in line with the western elbow or Walney island, N. by E. $\frac{1}{4}$ E. (view C., Sheet 11), clears Hilpsford bank off Walney island, and all the dangers of Morecambe bay, and crosses Shell flat in $2\frac{1}{2}$ fathoms. Black Combe in line with South-end farm on Walney island, N. $\frac{1}{3}$ E., clears Morecambe flats, Fisher bank patches, and the outer patches of Rossall oyster grounds in $2\frac{1}{2}$ fathoms at low water.

Preesall windmill, in line with Fleetwood church, S.E. (view G, Sheet 11) leads outside Fisher bank patches; and Preesall mill, a little open north-eastward of Fleetwood low lighthouse, S.E. $\frac{3}{4}$ S. leads through the Swatchway between Fisher bank patches and spit, in 19 feet at low water.

Having advanced so far up Lune Deep as to be abreast the North wharf, pass to the northward of King Scar red buoy; close the Wyre lighthouse, on a general south-easterly bearing, keeping clear of the North wharf by the lead; and if having to wait for the tide to enter Fleetwood, anchor to the north-westward of the lighthouse, or near the Fairway buoy, in about 4 fathoms at low water.

Black balls are shown by day, and the town or tower lights at night, while there is a depth of 9 feet in the channel; but the lights in one

lead over the Little Ford and Knott spit, and from 2 to 5 feet more water will be had by keeping in the buoyed channel to the westward; this track however can be pursued only by day. From the pile lighthouse keep Fleetwood lighthouses in line bearing South nearly, until nearing the Little Ford; then pass between the chequered buoy on it, and the red one at the Point of the Great Ford, and resuming the line of lighthouses the highest light must be opened eastward of the low one to clear the south end of Great Ford, and brought in line again when abreast the outer perch of the Black Scar; again quit the line and pass through the curved channel marked by the perches and the red buoy to the westward, and the two black buoys to the eastward, skirting the beach under the low lighthouse, and be ready to let go an anchor directly the harbour opens. Keep to the westward of the red mooring buoys lying in the stream.

Lune Lighthouses, built in 1847, stand, one on Cockersand promontory, and the other, called the Abbey, on Plover Scar, at the junction of the estuary with Morecambe bay; they are E. by S. $\frac{1}{3}$ S. and W. by N. $\frac{1}{3}$ N. 884 yards from each other, and are visible from between the directions N. $\frac{1}{2}$ W. and S.W. The upper light on the promontory is in a wooden structure, 54 feet above high water; the lower light on the Scar is in a stone tower, and is 20 feet above high water; the lights are white and fixed, and are shown while there is a depth of 8 feet in the Channel.

Sands and Buoyage.—The outfall of the Lune is between Bernard wharf, Preesall, Pilling, and Cockerham sands upon the south, and Sunderland shoulder upon the north. These all dry at low water, and collectively form one broad foreshore, through which the river winds in many shallow and irregular channels. The highest parts of the sands are from 16 to 28 feet above low water.

The deepest water in the channel of the Lune up to Sunderland hole (the anchorage between Sunderland and Chapel points) is marked by 5 black buoys. No. 1, the north-west or fairway buoy, is a large black nun, lying in 7 fathoms at the junction of the Lune deep, E.N.E. nearly $1\frac{1}{2}$ miles from the fairway buoy of the Wyre; then the bearings in succession of the various buoys are as follows;—No. 1 to No. 2, E. by S. $1\frac{1}{4}$ S. nearly three-quarters of a mile; No. 2 to 3, E. $\frac{3}{4}$ S. three-quarters of a mile; No. 3 to 4, E.S.E. nine-tenths of a mile; No. 4 to 5, S.E. by E. $\frac{1}{2}$ E. $1\frac{1}{4}$ miles; and No. 5 to Plover Scar lighthouse, E. $\frac{3}{4}$ S. nine-tenths of a mile.

Abbey Hole is the only place inside the sands barring the entrance to the river Lune, where a vessel of 10 feet draught can safely lie afloat at low water, and this anchorage is dangerous, especially near spring tides,

from the strength of the stream as well as the loose yielding nature of the bottom, which is mostly fine sand.

Directions.—Being in the Lune deep abreast of Wyre pile lighthouse, and with the Lune deep fairway mark on, proceed on that line until the fairway buoy of the Lune has been sighted or the Lune lighthouses are in line, then proceed on from buoy to buoy until abreast of No. 8; No. 4 buoy must be passed on the starboard side; No. 5 on the port side, and Plover Scar lighthouse on the starboard side. If it be desired to anchor in Abbey Hole, the vessel must be moored; drop one anchor in 16 feet on the line of the lighthouse and Sunderland point, distant from the former three-quarters of a cable; and the other up the stream on a line of direction just within the inner lighthouse, in 14 feet at low water. Vessels, should, however, if possible, avoid the necessity of stopping here or elsewhere in the Lune below Glasson dock; near the entrance of which is a strong pile staging for securing vessels to, and where they may take the ground safely in an upright position.

The edge of the Scar off Chapel point is marked with a perch, and the deepest part of the channel within the river is marked out by buoys; but, as the difficulties of the navigation are almost insurmountable to a stranger, it would be useless to describe them here.

By Night, when the Lune lights are seen, a depth of 8 feet in the channel may be reckoned on, and on the line of the lights nothing less than 6 feet will be found at half tide. The lights in line E. by S. $\frac{1}{2}$ S. lead a little to the southward of the fairway buoy, vessels entering the river should therefore open the inner light a very little to the northward of the outer one. On arriving abreast of No. 8 buoy, the inner light should be opened to a greater distance, and kept so until past No. 4 buoy. Midway between Nos. 4 and 5 buoys, the light should again be brought in line; abreast of No. 5 the inner light should be seen to the southward of the outer, from which position steer direct for the outer light until within a cable and a half of it, then pass it to the northward at the distance of half a cable, and enter the river.

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

(Continued from our September Number.)

AFTER nightfall, the captain, instead of anchoring, according to the usual custom, when in such a dangerous neighbourhood, continued sailing, first on one tack, then on the other; meanwhile a good look-out

was kept, and reefs were reported from time to time; and at a quarter past three, on the morning of the 26th, we were awakened by a horrible grating sound, followed by a shock, and a few minutes afterwards by another. We got out of our berths, Wraight calling out at the same time, "There she is at last, boys, hard and fast;" we went up, and found every one else on deck. Coyle, as he afterwards told me, went aft, and saw the captain, who was making preparations for leaving the vessel, and asked him our distance from land; he told him fifteen miles, and thought, with the help of good rafts, every one would be saved. Some little time after this, when leaving the vessel, the captain asked Coyle to come with him; Coyle then came below to me, where I was busy collecting some of our valuables, and putting them in a bag, and asked me if I would come in a boat, as one was then about to leave the vessel. I answered that I did not intend going in any boat; upon which he said that he would not either. I did not know at this time that the captain was leaving, but came on deck, and saw the boat, our largest whaleboat, about a hundred yards away; it was too dark at the time to see who was in her, but I was told it was the captain and a crew who had gone to bring assistance. I went below again, and put on a coat and waistcoat, filling the pockets with various small articles, such as fishing-lines, knives, etc.; then collecting my arms, brought them and the bag, which was filled with all the most valuable and useful things belonging to Coyle and myself, on deck. On going below again, I found Dr. Goble and Dr. Tate getting the stores on deck, so I gave them a hand; meanwhile those on deck were commencing to make rafts, but, unfortunately, they required some one who was able to give proper directions; the first mate, who ought to have superintended the work, was worse than useless, as he became almost mad through fear or excitement, and rushed about the decks, giving orders, it is true, but in a voice so hoarse, that they were perfectly unintelligible: the remainder of the men, with a few exceptions, behaved remarkably well, comporting themselves in an orderly manner, and only waiting to be told what to do; indeed, for the most part they were as cool and collected as if nothing whatever had happened. A few of us, among whom were Coyle, Hargrave, and Crommelin, stole a few moments to satisfy the inner man, and adjourning to the roof of the cabin, set to work on some preserved meat and biscuits; everybody could get as much as they wanted to eat, as all the provisions were on deck. There were also some cases of brandy opened, and a glass served out to any one who wanted it; one or two only drank too much.

While these minor events were taking place, the boats had been got out, and lowered, some provisions put into them, and a hand or two left in charge: several others, however, among whom I noticed Dr. Tate, got into the boats soon after, but were peremptorily ordered out by one

of the sailors. Goble also came forward with the chronometer and charts saying, that the mate had told him to get into the boat with them, but the sailor told him he could put them in if he liked, but he should not go himself.

During this time the construction of the first raft had been proceeded with; the trysail boom and gaff had been got down, and these, with the broken pieces of the maintop-gallant yard, were put over the side, and lashed to the body of the raft, which was already in the water, and was composed of the two main deck ladders, and some parts of the hatches and galley; there was a great deal of rope used in the construction of it, but as there were landsmen employed, as well as the sailors, in lashing the parts together, the knots made by the former would not be likely to hold very well, which, to a great extent, no doubt, will account for what happened afterwards. The other raft, though smaller, was much more compact; there were no spars in it, but in place of them, some large planks were nailed firmly together. Of these the framework was composed, and across them were placed parts of the hatches, and other boards, and the whole securely lashed together. The bulwarks were knocked out for the purpose of launching the rafts. The larger one had on it eleven persons, among whom was Coyle, who asked me to come. This I promised to do, but said I would not leave the vessel till she went down, as there would then be plenty of time to embark; both rafts, the smaller one also being full, were then passed astern and made fast with a hawser.

The vessel meanwhile had been fast sinking for an hour or so before, the water had begun to pour into her, in consequence, it is supposed, of the sternpost having been carried away, and when the second raft was launched, her deck was on a level with the water's edge. Some time previously the ship's boat, with two or three men in her, had got loose, and had drifted away some distance to leeward. When this was observed, the other boat was manned by some sailors, and sent to her assistance; when about to start, Goble also got in and went with them. While the boats were away the old brig sank, heeling over to port as she did so; a groan of agony, that I shall never forget, arose upon the morning air as the waves rushed over her, and I, with one or two others, sprang off the stern and made for the rafts, which, having been cut loose at the moment she began to go down, were rapidly drifting away. According to promise, I swam for the one on which I had left Coyle, and the captain's steward, whose name was Morris, also joined us, increasing the number of persons on the larger raft to thirteen, while there were twelve on the other. The whaleboat had now reached the other boat, taken her in tow, and made for the wreck; and, although we were between it and them, the boats passed at a distance of fully one hundred yards, ap-

pearing studiously to avoid us ; this, however, did not trouble us much, as we were all thinking of the poor fellows that we could still see struggling in the water, though unable to render them any assistance. We saw the boats pick up some of them on their way, but they passed by others, and went to the vessel, of which the topgallant masts and part of the starboard quarter only were visible, on all of these places we could see persons clinging ; we saw the boats then take people from the wreck until they appeared to be filled, after which they started for the shore, and in little more than half an hour they passed out of sight, and we saw them no more.

CHAPTER III.

When the rafts were cut loose from the wreck they were both fastened by a hawser, this we were obliged to cut soon afterwards, as the rafts were bumping against one another, and sometimes one getting partly under the other, to the imminent danger of both ; however, both drifted along at no very great distance apart, and for some time we were within speaking distance. We had two oars with us, which Coyle had taken care to provide, one of these we cut in half, making a hand paddle of the blade, the other we rigged up for the purpose of steering, or attempting to do so ; there was also one oar on the other raft. I may as well enumerate the occupants of the rafts, as I shall have hereafter frequent occasion to refer to them by name. They are as follows :—Tanner, Taylor, Hazelbrook, Morris, Sanderson, Haydon, Phillips, Smith, Ingham, Bardon, Siddell, Coyle, and myself on the large one ; on the other were : Polin, O'Malley, Hardy, Dalgleish, Hooker, Angel, Thomson, Heakman, Rowe, Parnell, Williams, and Grant. Sanderson, the only sailor with us, was rather the worse for liquor when we left the wreck and was in a sleepy state for some little time, but, as the day wore on, began to recover his senses. With his assistance we endeavoured to hoist a sail, having with us a tent belonging to Coyle and myself, in which were some blankets and clothes. This we rigged up, making use of the handle of the oar which we had cut in two for a mast ; however, we could not manage it very well, as it was with the utmost difficulty we could prevent it from slipping through the raft, and Coyle stood supporting it with his shoulder the greater part of the time. About this time we saw a man in the water, whom we made out to be Grant, at a distance of more than a hundred yards to windward of us, he appeared to be trying to reach our raft, but, of course, we were utterly unable to help him, and before very long the poor fellow went down. Owing to some of our passengers saying that the sail was doing more harm than good, we took it in after some hours, and began to paddle with the blade of the oar and a piece of board that we split off the raft ; two men were also paddling on the other raft. They appeared

to have more control over it than we had over ours, in consequence of it being much lighter. Occasionally, we were close enough to speak to one another. They seemed very desponding, but we told them to keep a good heart, as we had seen land right to the leeward which we must reach, as we then imagined we should, before next morning.

The breeze had been gradually freshening during the day, and by night had become very squally; before it grew dark we several times cheered to the other raft, being then about a quarter of a mile apart, and waved our hats, they at first responded, but the last time took no notice of us, and appeared to have lost all hope. We lost sight of them at nightfall and never saw them again alive. Some of our men also despaired when we lost sight of land. Morris was the first to show signs of giving up; he said he was sure that we would never see the morning light, and that we were drifting right out to sea. Tanner and some others also looked very dispirited. However, although things wore a very gloomy aspect, there was no reason for giving up so soon, as there was really no immediate danger; we certainly were in a most uncomfortable position—wet through, with nothing to eat or drink, but we had the raft under us, and the sea, though gradually rising, was not then very high. One or two of us then began singing, with the view of keeping up the others and our own spirits. This we kept up at intervals during the night, occasionally shouting loudly to the others to keep awake and cheer up; latterly we were answered but seldom. Towards morning the squalls became more frequent and more severe, so we left off paddling (there were only two of us doing so) and singing, and made some sort of shelter of the tent, as it was bitterly cold, sitting as we were up to our waists in water, with the driving rain pelting us mercilessly, and from time to time the waves washing completely over us. The sea by this time had begun its work of destruction, the lashings were slackening, and our raft had already commenced to come to pieces.

The morning of the 27th broke, and with its cheering rays the spirits of the most desponding rose for a while; it was still squally, and a heavy sea running. At the first dawn we saw no signs of land, but, as it became brighter, observed some islands to leeward at a distance of, perhaps, five miles: these I subsequently ascertained to be some of the Family Group. We at first imagined we were going straight towards them, but the current was taking us past to the northward. We began to repair our raft, and get everything in order, but we found that lashing planks, spars, &c., together, in a sea-way is no easy matter, especially when the work has to be done under water. The tent had been given to Haydon to make fast till we should require it, but he let it go overboard, so our sailing was at an end, and the blankets and clothes had long since been washed away: Haydon had also let a tomahawk drop

overboard before this. We had still, however, an axe, so with this we set to work to make paddles enough for all hands, and, though I thought it useless, we tried to direct the raft towards the land; and, at all events, if it had no other, working had the effect of keeping the blood in circulation, and also of keeping us awake. Later in the day, many had given up paddling, although we constantly urged them to stick to it, more for their own sakes than for any other reason. Coyle worked the whole time like a horse, and Phillips also worked well; Smith, who was an old man, was getting rather weak, but did not for a moment give up hope, and did his very best the whole time. After we had past the islands we could still see land to leeward, but at a great distance. Taylor began to lose his senses, and, in the course of an hour or so, became quite insane; towards evening, however, he appeared to be getting better, but never quite recovered. Morris also became insane the same evening.

This, the second night of our voyage on the raft, was by far the worst time we experienced; the sea was much higher and the weather more squally than ever, moreover the raft was in a very shaky condition and getting worse every minute, as were quite unable to do anything in the way of repairing at night. Shortly after dark the raft, which was tossing about terribly, turned bodily over, and, of course, everyone was thrown into the water; in some way or another I got right under, and on reaching it, was seized by someone who was then holding on to it, and pulled down by him, I struggled hard to get back with him to the raft, but without avail, and, finding that we were both sinking rapidly to the bottom, began to try and get free, this, by a violent effort, I succeeded in doing, and again made for the surface, reaching the raft safely, but with very little breath to spare. I sat for a minute or two on the boom to recover myself, and then got on to the body of the raft where the others were then sitting; Coyle then told me that he had been calling for me, and, getting no answer, thought I was gone. On counting our number, we found that one was missing, which proved to be Tanner. I believe he could not swim, and he was in a very weak state. Hazelbrook was apparently lifeless, though on the raft. We took his shirt off and began to rub him, to try and restore animation, but at this moment the raft turned over again, and we were obliged reluctantly to let him go; we never saw him again. Morris was also missing after the second capsizing.

From this time until near morning we lost no more of our fellow passengers, though again and again the raft turned over, often two or more times in succession: when this happened the greater number of us would follow it round, climbing up after the manner of a treadmill, while others would swim and wait till it became steady. This latter plan I generally adopted, after a very narrow escape I had, on which occasion

I owe my life to the promptness of Coyle in answering my call. It happened in this way: in climbing round the raft, both my legs from above the knees downwards got jammed in between the ladders and hatches of which it was composed, I struggled ineffectually to free myself, and the edge at which I was caught then going down, just as my head was the only part above water, I shouted to the others to come back, thinking that this would perhaps slacken the strain, Coyle was the only one who did so, but it had the desired effect, and I got free. Towards morning, Taylor was drowned in the same way as the others had been, and Sanderson became insane, and not very long afterwards died, partly from exhaustion, and partly from having swallowed a great quantity of salt water, after he had lost his senses.

(To be continued.)

PROBLEMS.

THE ANSWER TO No. 4.

THE answer given in the September number to this problem, although not incorrect, is not complete. The explanation it gives is that suggested by Laplace—viz., that the observed acceleration of the moon's mean motion relatively to the rotation of the earth, is owing to the fact that the eccentricity of the earth's orbit has been diminishing during the last 8,000 years. But the astronomer Adams has since shown that only one-half of the observed acceleration can be accounted for in this way, and there, therefore, remains the other half to be accounted for in some other manner. This has usually been done by assuming the retardation of the earth's rotation, and various suppositions have been set forth to account for such retardation. Thus M. Delaunay, M. Dufour, and Sir William Thomson have severally suggested the tidal friction, the increase of the inertia of the earth by meteors falling upon its surface, and the melting of ice from the polar regions, as the cause of the earth's slower rotation.

We may add that Professor Huxley states in his "Lay Sermons," whilst writing on geological reform, that it is generally admitted that it is not absolutely certain, after all, whether the moon's mean motion is undergoing acceleration, or the earth's rotation retardation.

S. WADDINGTON.

THE
NAUTICAL MAGAZINE.

NEW SERIES.

NOVEMBER, 1872.

OUR GREAT PORTS.

SECOND to the size, class, capacity and capability of the ship in which the average sailor spends two-thirds of his existence, the port, at which he passes the remainder, claims his interest and attention. It cannot, therefore, be out of place for such a magazine as the *Nautical* to take up a few pages with the consideration of the resources of our leading maritime towns. It is proposed to do so, in a short and concise manner, so that mariner friends, whose time is generally too much occupied for extensive reading and research, may get a clear idea of the population, trade and extent of "Our Great Ports."

The history of the rise and fall of ports is full of interest. Adam Smith recounts that "After the fall of the Roman Empire, the landed gentry appeared to have lived in fortified castles on their own estates. The towns were filled with mechanics, tradesmen, &c., in an almost servile state. Subsequently, the monarchs, who were most at variance with the barons, granted charters of incorporation and other privileges to them"—(*i.e.*, the cities). "The cities of Italy were the first to obtain opulence, and the shipping of Venice, Genoa, and Pisa, became the great carriers of the Crusading period." This prosperity was caused by purely adventitious circumstances. Of such were the monopolies and charters granted in those times by the various reigning Sovereigns, of whom notable examples were furnished by Philip 1st of France and our own John. The position also of a port tended largely to promote its development. Modern science, at least, amongst the commercially active nations,

has dispensed entirely with such aids; and such places as Glasgow, Liverpool, and Cardiff spring up and flourish, whilst the "sleepy and grassy" class, such as Gloucester, Milford, and others, remain in *statu quo*, although having better natural advantages. Mr. Buckle, in his great work, "The History of Civilization," well illustrates this. He observes: "The most advanced nations do, in their present state, owe comparatively little to those original features of nature which, in every civilization, out of Europe, exercised unlimited power. Thus, in Asia and elsewhere, the course of trade, the extent of commerce, and many similar circumstances, were determined by the existence of rivers, by the facility with which they could be navigated, and by the number and goodness of the adjoining harbours. But, in Europe, the determining cause is not so much the physical peculiarities, as the skill and energy of man. Formerly, the richest countries were those in which nature was most bountiful; now, the richest countries are those in which man is most active. If a river is difficult to navigate, or a country difficult to traverse, our engineers can correct the error, and remedy the evil. If we have no rivers, we make canals, and if we have no natural harbours, we make artificial ones." Besides, this power to conquer nature, and adapt her features to any purpose that may be required in commercial enterprises, the state of society is being gradually changed, and all the various nationalities of the world are being, as it were, fused by the rapid intercommunication established by modern appliances between the great ports of the whole earth. Such is a tendency of our times. The recent utterances of the Archbishop of Canterbury, at Carlisle, upon missionary enterprise, and the surprising number of "Heathen," who are congregated in London, have opened the eyes of the thinking portion of the public to this fact. Whether our "great ports" are to be the means of converting the "Heathen," or, inversely, perverting the Christian, is a mystery to us yet. The Tennysonian prophecy contained in "Locksley Hall" seems, however, on the eve of fulfilment. The poet says:—

For I dipt into the future, far as human eye could see,
 Saw the vision of the world, and all the wonders that would be;
 Saw the havens filled with commerce, argosies of magic sails,
 Pilots of the purple twilight, dropping down their costly bales;
 Heard the Heavens fill with shouting, and there rained a ghastly dew
 From the nation's airy navies, grappling in the central blue:
 Far along the world-wide whisper of the south wind rushing warm,
 With the standards of the peoples plunging through the thunder storm,
 Till the war drum throbb'd no longer, and the battle flags were furled
 In the parliament of men, the federation of the world;
 Then the common sense of most shall hold a fretful world in awe,
 And the kindly earth shall slumber, lapt in universal law.

This "vision" may be a little too highly coloured for common-place business men, but there can be little doubt that the modern tendencies are towards "fusion." The late war in France has resulted in the homogeneity of both Germany and Italy, and has actually given more solidity to France herself. The meeting of the Emperors of Russia, Germany, and Austria, at Berlin, upon a "peace platform" has a hopeful sign. The successful issue of the Treaty of Washington has developed a means of settling national differences apart from war. The discoveries of Livingstone broaden the path of civilisation, and the extraordinary expansion of successful commercial enterprises, which has characterised the period of peace, in England of late years, demonstrates the utility of pursuing such a course. The share which our great ports take in the latter result is not inconsiderable, and for the purpose of subserving a good end in indicating their position and capability the following notices have been written.

To the capitalist such information will be useful as an index of the nature of the business done, and of the spot best fitted for his investments. To the mariner it will afford an insight as to the nature of the trade, and where his peculiar trade may best yield a freight. To the general reader, such statistical knowledge will be afforded as may be both interesting and valuable.

The ports selected will not be according to the class mentioned in the old Customs' List, as that has long been abolished by the varied nature of the business transacted, and by the fall of "old," and more especially the rise of "new," ports.

It will be seen that ports naturally fall under one of three divisions:—
1st. Importing ports. 2nd. Exporting ports. 3rd. Both combined. Of the first division may be ranked London and Bristol as specimens. Of the second, Newcastle and Cardiff; and of the third, Liverpool and Hull. For, although the first lot do export goods to a great extent, the majority of vessels frequenting those ports require to shift in ballast to the "exporting port" to load or sail in that condition to their foreign port of charter. In like manner the second lot do import to some extent, but so large is the export trade that the principal number of vessels come from the "importing ports" in ballast to load. But in the third division will be found the *beau ideal* of what a port ought to be—*i.e.*, where all the tonnage is freighted both inwards and outwards. It is a question whether those ports, which are of the exporting class, are not the best adapted to promote other trades if proper measures were taken by the inhabitants. It will be seen, however, that the business done by them is the least in intrinsic value. This is owing to the exported articles being estimated at

the home cost, whereas imports have all the expense of carriage added thereto.

It is not a difficult matter to decide what class of port is of most value to the nation in which it is situated. Professor Fawcett lays it down as a dogma in political economy, that exports pay for imports. If this be so, and if the importation of the raw material, such as cotton, be exported in a manufactured state, the price of labour having enhanced its value to a great extent, then the port which imports and exports in like values and quantities, is the one which confers most benefit on the country of its nativity. It will not therefore seem altogether fair to class the forthcoming selection as they come according to the dead-weight business done; but, as that is the most convenient way to show the amount of shipping employed—the most interesting point to maritime readers—the list will be taken accordingly. If, for instance, the total register tonnage be taken for foreign, colonial, and coasting trade, inwards and outwards, the undermentioned ports will stand in the relative position in which they are placed, and this election will serve as useful a purpose as any other basis. The tonnages are taken from trustworthy sources, and only those ports are put down which, in the year 1871, showed a trade of upwards of one million tons in the aggregate, entered and cleared in all trades:—

No.					Tons.
1.	London	...	...	...	11,595,482
2.	Liverpool	...	...	...	11,321,145
3.	Tyne ports	...	...	...	7,425,698
4.	Cardiff	...	...	...	3,174,905
5.	Sunderland	...	...	...	3,139,699
6.	Glasgow	...	...	...	2,641,477
7.	Hull	...	...	...	2,634,018
8.	Dublin	...	...	...	2,591,690
9.	Belfast	...	...	...	1,984,080
10.	Swansea	...	...	...	1,710,831
11.	Southampton	...	...	...	1,644,239
12.	Bristol	...	...	...	1,564,697
13.	Hartlepool	...	...	...	1,578,341
14.	Newport	...	...	...	1,367,969
15.	Leith	..	...	...	1,134,123
16.	Cork	...	...	...	1,007,437

Mr. Fowler, the able stipendiary magistrate for Swansea, in his essay on Milford Haven as a national port, well remarks that:—"The history of the world, ancient and modern, abounds with examples of the direct

and indirect benefit which accrues to a community from the rise and growth of commercial ports. The history of Athens, Carthage, and Alexandria in the old world, and of Amsterdam and New York in modern times, gives us valuable evidence upon this point." Such histories should be more studied.

The career of a man who has succeeded in business may be a guide to another to follow him, and it is on the same principle that communities should proceed. There may, happily, be some embryo ports, only requiring the knowledge, wealth, or skill of their sons to develop them, if properly directed; and the example of other places, which have been developed, may tend to the same result in their case. There can be little doubt that, for the future, whatever it may have been in the past, the world will be governed from the seaside. The increased swiftness of transit and the rapidity with which communications are now made, evidently tend to develop our great ports more and more, and render them more weighty, not only in the commercial world, but in the political and social world as well.

Given then a proper estimate of the destiny of the populations on the shores of the sea, a fair knowledge of the capacities of the several ports and the experience set forth in a judicious manner of those seaside towns which have figured prominently in the past, a greater impetus may be given to the trade, the intelligence and prosperity of maritime communities, the well-being of the seafaring classes, the equitable regulations of shipping law, and a stimulus, too, to improvement in naval architecture generally.

The first port to be noticed will, of course, be that of the metropolis, and it may be unnecessary to remark that these sketches will be entirely of the commercial aspects of each port.

THE BRITISH CONSTITUTION AND GOVERNMENT :

A DESCRIPTION OF THE WAY IN WHICH THE LAWS OF ENGLAND ARE MADE AND ADMINISTERED.

(Continued from our October Number.)

CHAPTER XI.—THE ADMINISTRATION OF JUSTICE—*(Continued.)*

The course pursued in the conduct of trials before the Judges of Assize, before the Central Criminal Court, sitting at the Old Bailey, before the Recorders in Borough Sessions, or the Chairman of the Jus-

tices sitting in Quarter Sessions, is the same in all material points. If, therefore, we follow the course pursued at the assizes, we shall see in what manner justice is administered throughout the country.

The Sheriff, having ascertained from the Associate when the Judge is expected, goes to meet him, and attends him as long as he makes circuit within his county. Upon his arrival in each town, he accompanies him to the Court House, when the ceremony of reading the Commissions is gone through, authorizing the Judge to act. This done, the Judge may at once proceed to the trial of causes and prisoners, or he may adjourn the Court until another day. He usually adjourns the Court until the next day, when the first step taken is to swear the Grand Jury, whose attendance the Sheriff will have secured. Common jurors will also have been summoned by him, and be in attendance. All men between the ages of twenty-one and sixty, who are freeholders, or who rent houses of the value of £30, in Middlesex, and £20 elsewhere, are liable to be called on to sit as jurors, unless they be Peers, Judges, clergymen, Roman Catholic priests, dissenting ministers following no other occupation except that of schoolmaster, sergeants and barristers-at-law, attorneys, proctors, officers of courts, coroners, gaolers, physicians, surgeons, apothecaries, officers in the Army and Navy on full pay, licensed pilots, masters of vessels in the buoy and light service, household servants of the Sovereign, officers of customs and excise, Sheriffs' officers, high constables, and parish clerks.

The Grand Jury must consist of at least twelve men; it, however, generally numbers more and is usually composed of men occupying a somewhat higher position in life than common jurors. The Grand Jury having been sworn, the Clerk of the Court reads the Royal Proclamation against vice and immorality, after which the Judge charges the Grand Jury, reviewing the more important cases that await trial, and explaining points of law upon which they may need information. The Grand Jury then retire to their room, where they are furnished with a separate bill of indictment against each prisoner, stating the offence with which he is charged, and how he comes before the Court, and having inscribed on the back of it the names of the principal witnesses who appear in reference to the matter. Having examined each witness in turn, no one else being present, the Grand Jury consider whether the bill of indictment is a true bill or not. If a majority of at least twelve of their number decide that the evidence they have heard, being uncontradicted, would be sufficient to prove the guilt of the prisoner, the bill is endorsed "A true bill," or they may say the bill is true in some respects, and not true in others, or they may amend the bill, and return it "A true bill," as amended. If less than twelve think the evidence sufficient, they endorse the bill "*Ignoramus*:" "We do not know,"

whence comes the phrase, "Ignoring a bill." The more common endorsement, however, is "No true bill," and when this is the finding of the Grand Jury, the prisoner is free. He may, however, be again apprehended at some future time, and put upon his trial for the same offence, whereas, if his case had proceeded to trial, and he had been acquitted, he could not, for when once a man has been tried and acquitted, he cannot be again charged with the same offence, no matter what proof of his guilt may be afterwards discovered.

The Grand Jury, from time to time, as they proceed with their work, return into Court, bringing the bills with them; and the Clerk, in their presence, reads the name of the prisoner on each bill, and the finding of the Grand Jury endorsed on the back of it. When they have considered and endorsed all the bills of indictment, they are dismissed; but, before retiring, they may make any presentment they think fit, touching the public welfare.

All those prisoners against whom true bills have been found, have now to be tried, and must be brought to the bar. If in custody, a prisoner will be brought up by the gaoler; and, if he should have been permitted by the authority who committed him to go at large on bail, between the time of his commitment and his trial, some of his friends having been surety for him, he will probably appear of his own accord. If not, his friends will forfeit their bail, and the Sheriff will seize their goods if they do not pay. But, although those indicted are kept in safe custody, every man, according to the English law, is presumed to be innocent until pronounced guilty by the jury. This does not mean that the law holds his innocence to be more probable than his guilt, but merely that the burden of proof lies upon the accusers—not that the prisoner has to prove his innocence, but that his accusers have to prove his guilt. This, also, is the principle which forbids that any should be punished before conviction. The detention of a person in custody awaiting his trial, must be regarded as a security for the public, not as a punishment of the person detained.

Let us suppose one of those against whom the Grand Jury has found a true bill is indicted for embezzlement, inasmuch as he has been charged with having stolen some money belonging to one who has employed and trusted him. Offences of this character are dealt with by the law with great rigour, because if they were common, they would render the conduct of business impossible by preventing all confidence between employer and employed. The prisoner so indicted having been placed at the bar, is called upon to plead "Guilty," or "Not guilty." If he plead "Guilty," the plea is recorded, and the Judge passes sentence. If "Not guilty," a jury is called to try the case as between the Crown and the prisoner, for the prisoner if guilty is held to have done injury

to the community by committing this wrong, and the Sovereign, anxious for the welfare of the people, prosecutes.

This is the time for the prisoner to object to any of the jury who are to try him, for it is held that inasmuch as the fate of the prisoner depends upon the men composing the jury, justice requires he should have something to say in regard to the choice of them. Accordingly the law gives him the right to challenge them. He must do so as their names are called, and before they are sworn. He may challenge the whole array, or list of jurors, on the ground of some partiality or default on the part of the Sheriff; or he may challenge jurors singly, either on the ground of incompetency, if, for instance, they be aliens or otherwise unqualified by law, or of bias or partiality, or of infamy through having been convicted of some crime; and in each case the ground of objection must, if required, be shown to the Court. In cases of capital charges the prisoner may challenge thirty-five jurors peremptorily—that is, without giving any reason. The King, as prosecutor, however, must show his reason for challenging in all cases, unless twelve jurors can be found in Court to whom he does not object.

Twelve accepted jurors having been sworn, the case proceeds. The Crown will be represented by a barrister, so called because he is admitted by one of the Inns of Court to plead causes at the bar. Acting in this capacity he would be styled counsel for the prosecution, and might be nominated by the person who actually prosecutes in the name of the Crown. If not, he would be appointed by the Court, and paid by the county. It is his duty to explain the matter of the indictment to the jury, and then to examine the witnesses in support of it. All this must be done in the presence of the prisoner, who is at liberty to conduct his own defence, or be represented by a barrister as he chooses. He must do either one or the other, and is never allowed to do both at the same time. If he be quite without means, and ask for counsel, the Court commissions a barrister to defend him without cost to himself; or, if the matter be small, the Judge himself cross-examines the witnesses for him, and generally sees he is treated fairly.

The witnesses must, in all cases, speak of what they have seen or know. They must not tell of what they have heard, or what they suppose, or think likely, but what they can certify to as matter of fact within their own knowledge; nor may they relate any conversation except such as occurred with, or in the presence of, the prisoner. This is but fair to the prisoner, because he could not in reason be asked to procure evidence to contradict that of which he could have no knowledge, and it is clear that, if descriptions of conversations other than those which occurred in the presence of the prisoner were allowed, they would soon lead beyond the matter in dispute and make the case interminable.

In the case supposed, there would probably be evidence of the prisoner's having received the money, of his having spent, or had in his possession more money than was usual with him, and evidence also that the money he received was not paid over to the proper person. Now, perhaps the person who paid the money to the prisoner might have heard, upon the day after he had paid it, that it was not paid over to the person for whom it was intended; but, although this might be perfectly true, and although the witness might be perfectly convinced of its truth, he could not give evidence of the fact, because he would be speaking only from hearsay. Much less would he be allowed to say how he became possessed of the information. The man who should have received the money from the prisoner might have told him, and he would probably be able to give a full account of all that passed between them. This, however, would be no evidence against the prisoner; it would be evidence only of the opinion of the two persons conversing. If, however, the statement in question were made to the witness in the presence of the prisoner, his description of what occurred would be evidence, and what the prisoner said in reply would also be evidence.

The Court will allow nothing but personal knowledge of facts to be spoken against a prisoner, nor does the law allow the prisoner himself to be questioned after he has pleaded. It is commonly said that a man's mouth is closed when he is on his trial; but this is not strictly correct. He or his counsel may say whatever they think will serve him; the law says only that a prisoner shall not be questioned save to say whether he is guilty or not, and says so in the interest of the prisoner himself.

As soon as a witness has completed his statement as against the prisoner, it is open to the counsel for the defence, or the prisoner if there be no counsel, to cross-examine him, and, thereafter, he may be re-examined, but only upon matter respecting which he has been cross-examined. He may then be again cross-examined, but only respecting points upon which questions were asked in re-examination, and in this way the examination may be continued, but no fresh matter may be imported into it except by the Judge or Jury, who may ask what questions they please to elicit the truth. It has been said that "some barristers who are more intent on their own credit for ability than on keeping to what is right and fair, will sometimes endeavour to bewilder and perplex the honest witness, or to intimidate and, as it is called, 'brow-beat' him by harsh language or by charging him with bad motives. It is the duty of the Judge, whenever anything of this kind is attempted, to rebuke and check it."

All the witnesses for the prosecution having been examined, it is then competent for the prisoner or his counsel to address the jury and to call witnesses to show he is not guilty by disproving, if possible, what the

other witnesses have said. And when these witnesses have been cross-examined, the counsel for the defence reviews the evidence and does his best to show the weakness of the case against the prisoner; after which the counsel for the Crown does his best to show the strength of his case and the weakness of the defence. The Judge then sums up the whole case, pointing out to the jury the most weighty pieces of evidence, where contradictions are evident, and where they are only seeming differences; but in all cases leaving the jury to say which of the two conflicting statements is true. The Judge will also explain the law by which the jury must be guided, and he may comment upon the demeanour of the witnesses and express an opinion as to which of them is most worthy of credence, but in all this he will be merely advising the jury: the decision rests with them, and it must be their own decision absolutely.

If the case is clear, the facts well proven, and no doubt exist in the minds of any of the jurors, they may at once return their verdict. If, however, any among them doubt, they retire to deliberate. For this purpose they are given into the charge of an usher of the Court, who is sworn to keep them in safe custody, and not to allow them food, fire, coal, nor candle light, nor to suffer anyone to speak to them, nor even to speak to them himself, save to ask them whether they have agreed on their verdict. The usher so sworn conducts them to a jury-room and locks them in until they have agreed on their verdict, which must be unanimous, and, therefore, in some cases not easily arrived at. Sometimes juries have been locked up the whole night without agreeing, but this is seldom done, for when it is found there is little hope of their agreeing, or when fears are entertained of the health of any of them, the Judge may dismiss them, and the prisoner has to be tried again.

When the jury have agreed, they are conducted into Court by the usher in charge of them, who is questioned touching his observance of the oath he took, and then the Clerk of the Court calls upon the jury to say whether the prisoner at the bar is guilty, or not guilty. The foreman of the jury answers, and if he says, "Not guilty," the prisoner is free, if "Guilty," the Judge proceeds to pass sentence according to law.

In Scotland the jury are allowed to return a verdict of "Not proven," when they feel they have not sufficient evidence of the prisoner's guilt to justify a conviction, but yet are not satisfied of his innocence, so that when in Scotland the jury return a verdict of "Not guilty," it means the jury think him innocent, while in England it may mean only that they are not satisfied of his guilt. A verdict of "Guilty" transforms a man into a convicted criminal, but the verdict is that of the jury, twelve free men, perhaps of the convict's own station in life; it is not

the verdict of the Judge, nor the Sovereign, nor any person in permanent authority; and throughout the trial has been conducted on principles favourable to the prisoner. Nor is the punishment accorded that he may suffer. Distress of body and mind are inevitable consequences of punishment, but it is not with this object, primarily, that punishment is inflicted. If it were so, the community would be guilty of punishing from feelings of revenge. The first object in view in the administration of criminal justice is the protection of the community, and it is because the prospect of punishment deters some from evil courses, who would otherwise do criminal acts, that punishment is inflicted. Punishment is also designed to reform those upon whom it falls, but this must ever be a subordinate object, and cannot be persisted in at the risk of sacrificing the chief end of punishment—namely, prevention.

CIVIL ACTIONS.

The course of procedure in the conduct of a civil action differs according to the nature of the action, and the Court in which it is tried, but generally, the plaintiff, bringing the action, states his case, or has it stated, by his counsel, who also examines his witnesses in support of it. The defendant, or his counsel, states his case, and examines his witnesses, and the Judge, if the trial be conducted before a Judge, or the Chairman, if the case be such as comes within the jurisdiction of the Court of Quarter Sessions, reviews the whole of the evidence in giving the jury charge of the matter. The jury then returns a verdict upon the evidence, and the Judge or Chairman gives judgment accordingly. In a civil action both parties stand before the Court on equal terms; neither of them are in peril, therefore favour is shown to neither.

THE RIGHT OF APPEAL AND THE PREROGATIVE OF PARDON.

Should a suitor feel he has not had justice done him, he has, in most cases, the opportunity of appealing to some Court other than that in which his action was tried. The Court to which he appeals is determined by the nature of the action and the place where it was tried.

Final appeals from decisions given in the Court of Queen's Bench, the Court of Exchequer, and the Court of Common Pleas, as well as in the Court of Chancery, and the Probate Court, are heard and determined in the House of Lords by the Lord Chancellor, and such Peers as have filled the office of Lord Chancellor. Formerly other Peers influenced the decisions come to by their votes; but, although theoretically the judgments given are the judgments of the whole House, none but the Law Lords now sit in cases of appeal.

Appeals from the Admiralty Court, the Court of Arches, from India and the Colonies, are all made to the Sovereign in Council, and are referred to the Judicial Committee of the Privy Council, who hear the arguments, and the evidence in the case, and thereafter advise the

Sovereign what decision to come to. The Sovereign, in accordance with that advice, passes judgment. The Judicial Committee of the Privy Council consists of such Privy Councillors as are learned in the law, and includes all ex-Lord Chancellors, and such of the Judges as may be Privy Councillors.

A convicted criminal has no appeal from the verdict of the jury; he may, however, appeal against the Judge's interpretation of the law, when directing the jury, to the Court for Crown Cases Reserved, which generally consists of some Judges other than the Judge whose decision is appealed from. If he can prove the Judge wrong, the conviction is quashed. The sentence, however, may be commuted, or wholly remitted by the Sovereign, on the advice of the Home Secretary, even though the prisoner be convicted according to law. It is the King's prerogative to pardon, but it should be noticed that this prerogative is never exercised without some reason. If the reason is bad or not clear upon the face of it, the expediency of the act may be called in question in Parliament, and the Home Secretary, in that case, would have to answer for the advice given to the Sovereign. The King can remit fines as well as punishment; but, in the case of a civil action, the Sovereign has no power to disturb the verdict. Whatever the jury award as damages to be paid by the defendant to the plaintiff must be paid together with the costs which may be allowed, unless the plaintiff forgive him.

There is a further limit to the Royal prerogative of pardon. The Sovereign cannot pardon a breach of the Habeas Corpus Act, in respect of that clause which forbids the imprisonment of any person, beyond the seas, without trial; nor a common nuisance committed by one subject against another; nor an offence against a penal statute, after information has been brought, because the informer has acquired a private property in his part of the penalty.

If a man be found guilty of an offence by a jury, and facts afterwards come to light which prove him to be innocent, no matter how grave the charge against him may be, the verdict cannot be reversed, and there is no power by which he can be formally declared innocent; the error can be corrected only by the Sovereign granting a free pardon. The anomaly of a man receiving a free pardon for an offence which everyone knows he has never committed, is so strange, that at first sight, it seems impossible to justify it. It can, however, be explained upon the basis of the fact, that the law has always regarded the verdict of the jury, in criminal cases, as unquestionably right and unalterable. If powers were given to the Crown to reverse the verdict of the jury, in cases where the innocence of the persons convicted was subsequently proven, the same power could not be withheld in the case of a person

wrongfully acquitted in the estimation of the Sovereign. The Sovereign's power of review does not go further back than the verdict of the jury, but as it is almost impossible to place before the same jury as passed the verdict the new facts which have come to light, it is held to be wiser, and, certainly, it is more expeditious, to remit the penalty by a so-called free pardon. The sentence, too, may be commuted to a single day's imprisonment, if the Sovereign be so advised.

(To be continued.)

ON OATHS.

PART III.

(Continued from our September Number.)

A THIRD period in the history of English Oaths begins about the 18th century. Since that time the severity of the law with regard to political oaths has been steadily relaxed, while with regard to such oaths as are simply promissory, people have at last begun to be of opinion that they are not only useless, but irreverent, inasmuch as their employment assumes that a man may make a bargain with his Maker, and render the favour of Heaven conditional upon his performance or non-performance of an act. Even before the 18th century, the Toleration Act of William and Mary exempted all persons from penalties upon their taking the Oaths of Allegiance, Supremacy (the form of which had now been altered in favour of Dissenters), and Abjuration, and subscribing a declaration against transubstantiation. This, of course, was no boon to the Roman Catholics; still it was a relief to some sections of the community. In the year 1828 a declaration was substituted, in all cases, for the sacramental test imposed by the Test Act, then the declaration was itself abolished, and the Oaths of Allegiance, Supremacy, and Abjuration were thrown into a form tolerable for Roman Catholics. In the meantime other modifications were made to suit the consciences of Dissenters and Jews, and, lastly, in the year 1858, these oaths were consolidated, and in the year 1867 they were reduced into a simple form, capable of being taken by all of Her Majesty's subjects alike.

But the most notable expedient for relieving persons from the necessity of taking political oaths has been to pass every year an Indemnity Act, by means of which the principal statutes which impose the obligation to take such oaths are periodically placed in abeyance for a short time. The Act, however, does not altogether do away with the obligation, but gives those persons who ought to have sworn before the passing of the

Act, a further period of time in which to^s repair their fault. By this means the penal statutes are kept in full force, but at the same time are rendered harmless.

The indulgence of the Legislature does not seem to have had much effect in recalling defaulters from the error of their ways, for, down to 1867, we find, year after year, that the same Indemnity Act is passed, each time giving them one more chance; some, indeed, may have grown hoary in their disobedience, for this Act was passed, with a few intermissions, every year since the beginning of the reign of George II.

The last phase in the history of oaths was the inquiry which took place a few years since into their nature and working, with a view to ascertain whether any ought to be abolished, altered, or retained, and which resulted in the Promissory Oaths Act of 1868. Had those who conducted the inquiry been unanimous, we should probably have been able shortly to close the history of oaths and declarations, as political tests and as vouchers for fidelity, with a record of their total abolition; but, unfortunately, there seems to have been a great division of opinion on the subject. A report was made to the Government, but it was accompanied by four "Dissents," and appears on the whole to find less favour among those who conducted the inquiry than dissent number three. A mass of oaths and declarations has, however, been gathered from every quarter of the kingdom, and published. This collection, bulky in form, and incoherent in arrangement, is yet so full of strange oaths and declarations as almost to repay the trouble of perusal—certainly it shows how universal the custom has been of imposing an oath of office. Privy Councillors and petty constables, Bishops and beadles, each in his several station, is held to his duty by the same means. How to deal with this mass of forms seems to have been a difficult question. One party has a lingering regard for them, and though unable to disguise from themselves the impropriety of some, and the grotesqueness of others, would handle them as gently as possible. The other party have no such scruples, and state boldly and clearly the principle upon which they would act. They divide oaths into two classes. 1. Oaths, to the breaking of which penalties are attached by law. 2. Oaths to which no such penalties are attached. The majority of the first class are oaths taken in the course of judicial proceedings, and seem to be recognised unanimously as being in their proper places. The second class, consisting of promissory oaths, it is recommended should be abolished entirely, a declaration being substituted in a few cases. Promissory declarations are treated in much the same way. Had the opinions of this party prevailed, the effect would have been to abolish oaths and declarations in nearly every case, except where they are taken in judicial proceedings, instead of the half-hearted result of the Act of 1868, which, though it abolishes oaths in many cases, and

substitutes declarations in others, still retains both oath and declaration for many offices.

But if there be difference of opinion as to the abolition of Oaths and declarations, there can be none as to the opinion that the frame of most, especially of those taken under old charters or in pursuance of old custom, ought to be reformed. The form of oaths has long been a subject of satire. In ancient Egypt we are told :—

To mongrel curs infatuate cities bow,
And cats and fishes share the frequent vow.

Juvenal, Sat. 15, Badham's Trans.

Solemnities which have been paralleled in modern times in Bombay by the introduction into a court of justice of a cow, in order that a witness might have the satisfaction of holding its tail when swearing. Among the older oaths of our own country, no subject is considered too high or too low for their notice, and as the oath in such cases speaks in the most direct and simple manner the language which, when the subject is lofty, is usually dignified, becomes, when the subject is homely, so quaint as to raise a smile. The old oath of allegiance, quoted above, would probably be held to satisfy all the conditions required in point of language being dignified simple and brief. On the other hand, take the oath of the beadle of Wilton—"You swear that you shall true beadle be of this borough during the time you shall continue in the said office, and shall duly and faithfully take up all such swine-piggs as you shall see going up and down this borough, either in the time of the markets or fairs, or at any other time or times whatsoever, and that you shall at all times be attendant and obedient to the mayor of this borough, &c." Certainly, since the days of Eumus $\delta\iota\omicron\varsigma$ $\dot{\iota}\phi\omicron\varsigma\epsilon\dot{\iota}\varsigma$ —the godly pig-feeder—of the "Odyssey," no such splendid functuary as the beadle of Wilton has given himself to the care of pigs. It is unlucky that the duties he swears to perform are somewhat inconsistent. Constant attendance on the mayor must at times interfere with the taking up of pigs; indeed, one can well imagine that the conflict which must arise in the mind of a conscientious beadle when the mayor of Wilton goes one way and the pigs another, would be scarcely compensated by the splendour of office. It is to be hoped that all the officials of this borough perform their vows, for the mayor swears, among other things, that he will take care that the borough is victualled plenteously, and an officer, called the aletaster, swears that he will endeavour to see that all brewers, innholders, and alehouse keepers within the borough do brew good and wholesome ale for men's bodies. With plenty to eat and wholesome beer to drink, and all stray pigs in the custody of the beadle, the borough of Wilton ought to be a pleasant place to live in. Any one who turns over the pages of the Report of the Oaths Commission

will find similar examples of curiously particular oaths, the framers seeming in very few cases to have been content with a simple promise on the part of the juror to do his duty; as a rule they enumerate the details of such duty, and thus render the oath wanting in dignity.

Those who think that an oath is a solemn thing, and not to be taken lightly, will agree that in order to secure to it due regard, it should be simple and dignified in form, seldom administered, and always accompanied by a penalty in some shape for neglect to observe it; for without such penalty an oath, if a political oath, will be taken heedlessly, and broken without regard, while if it is a promissory oath, it will be ineffectual to compel or stimulate in the performance of duties. They will also agree that if motives of convenience have led us to treat in the manner I have mentioned the oldest and most famous of our oaths, the oaths of allegiance, supremacy, and abjuration, there can be little reason for the retention of promissory oaths, or even the milder form of "declarations," of less political and historical prestige. It is strange how long men have been in coming generally to perceive whence the binding force of an oath is derived. "The case is as Æschylus has represented it, 'It is not the oath which invests the man with credit, but the man the oath.' But 'now when we will not believe a man of tried honesty unless he pledge his oath, nay, when we even then can scarcely think sufficient caution taken unless we have other and strong corroborations of the oath, what else do we do than acknowledge voluntarily the perfidy of man, and profess, not without imposing a stain of ignominy on our race, that man cannot in anywise be safely trusted by man.'"—"Heineccius" quoted by Tyler on Oaths, p. 238.)

W. R. M.

THE BREAKWATER AT ALEXANDRIA.

THE bay of Alexandria is formed by the two projecting headlands of Cape Eunostos on the north-east, and Cape Adjemi and Marabut Island on the south-west. Stretching across its mouth is a long reef of mostly sunken rocks, three passages in which, styled respectively the Boghaz, Corvette, and Marabut, form the entrances to the port. This lies in the north-east end of the bay, and is well adapted by nature for a harbour, being surrounded by land on every side except one, and open only to winds from west-south-west to north-west. These, however, are the prevailing winds in this part of the Mediterranean, where they blow during eight or nine months of the year. Hitherto, the system adopted for carrying on the shipping trade of the port has been for vessels to

anchor in the roadstead, and to discharge and load their cargoes by means of lighters and boats from the land. This is a slow, expensive, and antiquated process. To do away with it the Egyptian Government have undertaken the new harbour works, commenced, in the summer of 1870, by Messrs. Greenfield and Co., of London, by whose exertions an extensive colony, alive with working people of all nations, has been created on the barren Mediterranean shore. No less than two thousand men are employed by them at present, and forty engines are daily at work.

The first work required by the Government is the construction of an outer breakwater to shelter the harbour from westerly winds. This commences at a point 800 yards south-west of the lighthouse on Cape Eunostos, thence stretching 500 yards in a south-westerly direction, and thence by a bend, or cant, 2,050 yards further, in a south-south-westerly direction—the whole length of the new breakwater being 2,550 yards. The principal entrance to the harbour will be round the south-west end of the said breakwater, which will be 1,500 yards from the shore, and there will be another entrance for small vessels and boats between the north-east end of the work and Cape Eunostos.

The character of the breakwater works is peculiar. They consist of large blocks of concrete deposited pell-mell on the sea-side; of small rubble stones in the interior, to fill the interstices between the blocks, and of large rubble stones, each weighing from 2 to 10 tons, on the harbour side. The width of the finished work is to be 20 feet at the top, with natural slopes to the bottom, and the average depth of water, before commencing, was 20 feet. The top of the breakwater will be 10 feet above the lowest level, or 7 feet above the highest level of the sea. The maximum daily rise of the tide is 12 inches, but the level of high Mediterranean, when the water is forced up into the Levant by westerly gales, is 3 feet above the level of low Mediterranean, caused by gales from the eastward. Twenty thousand concrete blocks are proposed to be applied in the manner described, each block 11 feet in length, by 6 feet 7 inches in breadth, by 4 feet 11 inches in height, measuring 13 cubic yards, and weighing 20 tons. The quantity of small rubble stones required in the interior of the work is 60,000 tons, and the quantity of large rubble stones required on the harbour slope is 55,000 tons.

The blocks are chiefly prepared with concrete of French hydraulic lime, from Teil in the Ardèche; the stone of the country, broken into small pieces, like road metal; sand from the beach, and salt water, all mixed together in iron drums, or cylinders, propelled by steam engines, and dropped in a semi-liquid state from the cylinders into wooden moulds, or boxes, of the required dimensions. The mixing of the concrete is done by the cylinders being made to revolve sixty revolutions

round their axles, which are fitted diagonally through them, and the effect of this motion is, that the concrete falls twice from end to end of the cylinder, and twice over the heavy iron axle inside for each revolution; 85 cubic feet of concrete are mixed at a time in these cylinders, making about ten mixings to a finished block. The wooden moulds are stripped from the blocks in thirty-six to forty-eight hours after the latter are made, and the moulds are then removed to receive other blocks. Three months of the Egyptian sun are necessary to dry these huge masses of concrete before they are shipped to the work. The first 20-ton block was made on the 20th January, 1871.

The foundation stone of the new works was laid on May 15, 1871, and the first block was deposited in the breakwater on the same day. Eight thousand one hundred blocks have been made to the present time, and 6,000 blocks have been deposited. The work of block-making is now carried on at the unparalleled speed of forty blocks, or 800 tons of concrete per day. The operations of making, lifting, shipping, and depositing these heavy masses are very interesting, and the steam machinery employed is so perfect that no accident has yet happened with any of them. The blocks are launched into the sea, five at a time, by drawing triggers, from inclined planes on the decks of barges, built especially for the purpose. Those deposited in the breakwater measure 1,150 yards in length, from a point near its south-western extremity. The rubble stone is deposited from hopper barges, immediately after the blocks, in the required proportions of large and small, the average level of the top of the work executed is 5 feet below low water. It is expected that the breakwater will be completed about the end of next year. In addition, a great harbour mole is proposed, to spring from the shore at the landing-place of the Cairo Railway, and to extend thence in a northerly direction for a length of 1,100 yards. The mole is to have a width of about 100 feet on the top. A line of inner quays is also in contemplation. The area of deep water inclosed within the outer breakwater is 1,400 English acres; that inclosed by the harbour mole will be 177 English acres.

The foregoing particulars are extracted from a memorandum by Mr. May, the chief engineer of the works in question. This document accompanies the report of Mr. Stanley, H.M. Consul at Alexandria.

APPOINTMENTS.—The Queen has been pleased to appoint Colonel Robert William Harley, C.B., to be Administrator of the Government of Her Majesty's Settlement on the Gold Coast, on the Western Coast of Africa. Her Majesty has also been pleased to appoint Herbert Taylor Ussher, Esq., C.M.G., to be Lieutenant-Governor of the Island of Tobago.

OUR STEAMSHIP LINES.

1.—CARDIFF TO NEW YORK.

We learn that another passenger line of steamers has been "laid on" from the United Kingdom to America. The enterprising people of Cardiff have resolved not to be behind the times in this respect, and accordingly in October began with number one of three first-class vessels to run from that port to New York. This is only a necessary result of the rapid advance of trade which has characterised Cardiff for the last thirty years. The rise and progress of this port has been mainly, if not altogether, due to the foresight and ability of the late Marquis of Bute, seconded by the judicious efforts of the trustees of his estate after his demise, and during the minority of the present Marquis. Owing to their skill, and the continued expenditure of the vast means placed at their disposal, there are now finished, and being built, at least 100 acres of floating dock room. A basin for a new dock is now all but complete. It measures about eleven acres, has a lock eighty feet wide, will have a depth of thirty-five feet water, and will form one of the finest of its kind in the kingdom. In the year 1831, it is recorded that the foreign trade consisted only of eight cargoes inwards and 144 outwards, the coasting business being only 773 inwards and 1,799 outwards, and these of small tonnage. The accommodation then for loading and discharging was formed of the Glamorgan Canal, and a very indifferent harbour space. About that time the first Bute Dock was projected, and it was opened in 1838. Since that period the history of the place has been one of continued prosperity until last year, when no less than 11,112 vessels, measuring 2,207,713 tons register, cleared outwards. Had it not been for a calamitous "strike," which took place amongst the colliers, the trade would, doubtless, have expanded still further. The principal traffic has, as yet, consisted of coal and iron. A through narrow gauge communication has, however, recently been established by means of the Rhymney and North-Western systems, with all parts of the north and midland districts; and a great expansion of trade, in its general branches is already apparent. There is, therefore, every hope that the projected steam line to the United States will be a decided success. It has been principally promoted by the Bute trustees, the great trading interests of the neighbourhood, and some Glasgow capitalists. The managing trustee, Mr. John Boyle, who is also chairman of the Rhymney Railway Company, has recently returned from the American Continent, where he has been making trading alliances and forming agencies for the transit of goods and passengers to all parts of that vast country.

The feasibility of the scheme can scarcely be wondered at, when it is considered how much our traffic with the Yankees is absorbed by steamers. There are now between 120 and 130 of these vessels, measuring 300,000 tons, at least, continually plying between our coasts and those of our "cousins" across the Atlantic.

Besides, others, such as the Bremen and Hamburgh boats, give us a call, and make a bid for our custom. Then, another consideration helps the hope of winning, and that is, the large populations which surround Cardiff. The number of persons who now inhabit Glamorgan, according to the last census, amount to 396,010; and the bulk of them are all within a radius of twenty-five miles of that port. Great towns such as Merthyr, Aberdare, Dowlais and Pontypridd, are within an hour's ride by rail inland. The population of the first named place amounts to 96,891. It is mostly inhabited by persons engaged in mining, and employed at the immense ironworks of the Welsh hills. They are generally in the receipt of large wages as a labouring class; and after accumulating a certain amount of savings, are much in the habit of emigrating.

It must also be borne in mind that the ports of the Bristol Channel have a great advantage over others of Great Britain, in their proximity to the East Coast of America; and especially that of Cardiff, with its splendid roadstead and unrivalled "holding" ground off Penarth, which forms a sort of open "harbour of refuge," safe to take in almost all weathers.

The new boats are being built by a famous Clyde man—Mr. Simons, of Renfrew. The first launched is the Glamorgan. Her dimensions are:—

Length	...	...	...	320 feet.
Depth	...	...	...	26 "
Beam	...	...	...	86 "

Fitted with compound engines of 450 nominal-horse power. Measurement, 2,500 tons gross. She is propelled by screw; is fitted with gas, and provided with every modern convenience adapted to the particular trade she is designed for. The writer, having seen her in one of the stages of building, can testify to her beautiful model. One of the sister ships will be somewhat larger, and will most likely be equal to the largest Atlantic boats afloat.

Having thus indicated briefly one of the new enterprises which is to form part and parcel of our great mercantile steam navy, we leave the subject, with the best wishes for the success of the project, and with the hearty hope that the corresponding future annual number of the *Nautical* may be able to chronicle other additions to the new fleet. We shall, in subsequent numbers, give an account of the existing companies among the large lines of steamers.

ON THE DEVIATION OF THE STANDARD COMPASS OF A
 "COMPOSITE" SAILING SHIP.

By J. T. Towson, F.R.G.S., one of the Honorary Secretaries of the
 Liverpool Compass Committee.

A composite ship is a term that indicates that she has an iron frame, and is wood planked, both for the decks and hull. As far as I am aware, ships of this description date their origin about twenty years since, the *Tubal Cain* having been the first classed at Lloyds. There have been, however, but few of this kind of ships built till of late years. Previously to 1861, when the third and final Report of the Liverpool Compass Committee was printed, no information had been received to induce the Committee to believe that the magnetic condition of ships of this description differed materially from that of ships constructed wholly of iron. Lately, however, both Mr. Rundell and myself have received statements concerning the magnetic condition of such ships, which appeared to be very abnormal. Our professional duties had, however, precluded either of us from observing the deviations on board any such ship till during the present month, when Captain McInnis called and gave information respecting the deviation of the compass on board the *Duke of Edinburgh*, which induced me to engage, at any sacrifice, to observe her deviations while being swung. On all former occasions, I had not perfect reliance on the correctness of the reports I had received. But I had examined Captain McInnis, in March last, on the Syllabus of Examination on the Deviation of the Compasses of an Iron Ship, and from the very good examination he passed, I was convinced his report was not very erroneous. The *Duke of Edinburgh* is a composite sailing ship, of 1,117 tons register, built with her head east magnetic, in 1867. The information I received from Captain McInnis, that most excited my surprise, was that the compasses had the greatest amount of deviation when the ship's head was in the direction in which it was when she was being built. As far as semi-circular deviation affects the compass when the ship's head is on the point or the opposite point to that on which she was built, the deviation is 0. But those parts of deviation that are expressed by the co-efficients A and E interfere on two of the cardinal points to the extent of their sum, disregarding their signs. This amount has been regarded as small, not generally exceeding 2°; and since it has been established by M. Gaussin and Captain F. J. Evans, that these co-efficients reverse their names, when the ship is swung in the contrary direction, it has, therefore, been recommended that they should be disregarded when,

their sum does not exceed $+2^\circ$ if swung to the left, or -2° if swung to the right. During the investigations of the Compass Committee, in no case, where the compass was placed on the midship fore and aft line, did the deviation represented by these two co-efficients, exceed double the above-named value. In the case of the *Duke of Edinburgh*, however, it was very far different. She was swung on the 9th instant when I found the co-efficients representing the deviation of the standard compass to have been $A = +8^\circ$, $B = 0$, $C = +8^\circ 30'$, $D = +2^\circ 30'$ and $E = -6^\circ 15'$. The usual course adopted, by professional compass adjusters, is to bring the ship's head on one of the cardinal points magnetic. If in this case to the east, we should expect the deviation to be very small, instead of which it was found to be $17^\circ 30'$ E., a greater deviation than when the ship's head was on any other point. To compensate this pseudo $+B$, in the usual way, a fore and aft magnet would be employed that would produce a deviation of $17^\circ 30'$ W., which would compensate the before-named deviation while the ship's head remained on the same point. But such a magnet, when the ship's head was west, would produce a deviation of $17^\circ 30'$ E., and since with the ship's head west, there had been previously a deviation of 13° E., as shown in Table B, the error would then be $30^\circ 30'$ E.; consequently no compensation has been effected, but tables of errors have been supplied, which, according to my judgment, could have been of very little value to the navigator.

The *Duke of Edinburgh* was expected to sail on the day after she was swung, consequently I had no opportunity of attempting to compensate these deviations. When I wrote "Practical Information on the Deviation of the Compass," I had had no idea that I should ever meet with co-efficients A and E so very large, but believed that in most cases they might be disregarded, still, in section 49 I stated that co-efficient A when large in amount "may be concealed by moving the needles on the compass card, or, if preferred, the same result can be obtained by moving the lubber line to the right or left, as may be found necessary $+E$ may be compensated by bringing the starboard corrector towards the stern, or the port iron corrector towards the bows, or $-E$ may be compensated by bringing the starboard corrector towards the bows, or the port corrector towards the stern." In writing the above I made use of the conjunction *or* instead of *and*, little expecting that any case would occur, in which both correctors would be required to be placed as above described, but in the case of the compass on board the *Duke of Edinburgh* since the $-E$ is two and a half times the amount of $+D$, both correctors would be required to be moved $88\frac{1}{2}^\circ$ from the athwart ship line, to compensate both D and E.

To conceal $A = + 8^\circ$, the north pole of the needle should be fixed to $N 8^\circ E$ on the card.

To compensate a compass having A and E very large, it is desirable that the ship should be swung and the co-efficients determined. The ratio between D and E having been ascertained, the position of the chain boxes, or iron correctors could readily be calculated. The supports of the correctors or the chain box should be so attached as to enable the compass adjuster to move them backward or forward as may be required.

For the purpose of compensating or concealing the A , the magnets should be so attached to the card as to allow the adjuster to alter their relative positions as may be required, but it must be remembered that no other compass card should afterward be used, unless it shall have been in like manner modified.

I supplied Captain McInnis with the co-efficients, from which Table A was constructed, also with the Napier's diagram, by which the deviations in Table B were determined, and I have no doubt that the *Duke of Edinburgh* will, on her voyage to and from Australia, be navigated as far as her compass is concerned, more satisfactorily than on her previous voyages.

TABLE A.

TO CHANGE A COMPASS COURSE INTO A MAGNETIC COURSE.

<i>Ship's head by Compass.</i>	<i>Deviation.</i>		<i>To be applied</i>	
			<i>to the Right</i>	
North	10	15 E.		
N. by E.	11	31 E.		
N.N.E.	13	12 E.		
N.E. by N.	14	59 E.		
N.E.	16	31 E.		
N.E. by E.	17	26 E.		
E.N.E.	17	26 E.		
E. by N.	16	23 E.		
East	14	15 E.		
E. by S.	11	9 E.		
E.S.E.	7	24 E.		
S.E. by E.	3	22 E.		
S.E.	0	31 W.		Left.
S.E. by S.	3	47 W.		
S.S.E.	6	2 W.		
S. by E.	7	3 W.		
South	6	45 W.		
S. by W.	5	9 W.		
S.S.W.	2	30 W.		

TABLE A.—Continued.

S.W. by S.	...	...	0	51 E.	...	...	Right
S.W.	...	...	4	29 E.	...	...	"
S.W. by W.	...	...	8	0 E.	...	...	"
W.S.W.	...	...	10	56 E.	...	...	"
W. by S.	...	...	13	3 E.	...	...	"
West	...	...	14	15 E.	...	...	"
W. by N.	...	...	14	29 E.	...	...	"
W.N.W.	...	...	13	54 E.	...	...	"
N.W. by W.	...	...	12	48 E.	...	...	"
N.W.	...	...	11	31 E.	...	...	"
N.W. by N.	...	...	10	21 E.	...	...	"
N.N.W.	...	...	9	40 E.	...	...	"
N. by W.	...	...	9	30 E.	...	...	"

TABLE B.

TO CHANGE A MAGNETIC COURSE INTO A COMPASS COURSE.

<i>Ship's head</i>	<i>Magnetic.</i>	<i>Deviation.</i>	<i>To be applied.</i>
North	...	9 0 E.	Left
N. by E.	...	10 15 E.	"
N.N.E.	...	11 30 E.	"
N.E. by N.	...	13 12 E.	"
N.E.	...	14 15 E.	"
N.E. by E.	...	16 30 E.	"
E.N.E.	...	17 25 E.	"
E. by N.	...	17 30 E.	"
East	...	17 30 E.	"
E. by S.	...	15 0 E.	"
E.S.E.	...	11 9 E.	"
S.E. by E.	...	5 0 E.	"
S.E.	...	1 0 W.	Right
S.E. by S.	...	4 45 W.	"
S.S.E.	...	6 0 W.	"
S. by E.	...	7 0 W.	"
South	...	6 30 W.	"
S. by W.	...	4 10 W.	"
S.S.W.	...	2 15 W.	"
S.W. by S.	...	1 0 E.	Left
S.W.	...	3 30 E.	"
S.W. by W.	...	6 25 E.	"
W.S.W.	...	9 0 E.	"
W. by S.	...	11 0 E.	"
West	...	13 0 E.	"

TABLE B.—*Continued.*

W. by N.	14	15	E.	„	Left
W.N.W.	14	80	E.	„	„
N.W. by N.	14	0	E.	„	„
N.W.	12	50	E.	„	„
N.W. by W.	12	21	E.	„	„
N.N.W.	10	0	E.	„	„
N. by W.	9	20	E.	„	„

EXPERIMENTS ON THE OXIDATION OF IRON.

By PROF. F. CRACE-CALVERT, PH. D., F.R.S., F.C.S., ETC.

(Reprinted from the “Memoirs of the Literary and Philosophical Society of Manchester.” Session 1870-71.)

THE value of zinc used in connection with iron, either as strips or spread over the surface in the form known as “galvanizing,” is set forth in the accompanying paper, and will be appreciated by our readers. Dr. Calvert has given the paper to us for publication, and has stated that he has not patented or protected his discovery in any way:—

Some two years since, Sir Charles Fox inquired of me if I could give him the exact composition of iron-rust—viz., the oxidation found on the surface of metallic iron. I replied that it was admitted by chemists to be the hydrate of the sesquioxide of iron, containing a trace of ammonia; to this he answered, that he had read several books on the subject in which the statements referring to it differed, and, from recent observations he had made, he doubted the correctness of the acknowledged composition of rust. He further stated that if he took a bar of rusted wrought iron and put it into violent vibrations by applying at one end the fall of a hammer, scales would be separated which did not appear to him to be the substance I had described.

This conversation induced me to commence a series of experiments which I shall now detail.

I first carefully analyzed some specimens of iron-rust which were procured, as far as possible, from any source of contamination. Thus, one of these samples was supplied to me by Sir Charles Fox as taken from any source of contamination. Thus, one of these samples was supplied to me by Sir Charles Fox, as taken from the outside of the Conway Bridge, the other secured by myself at Llangollen, North Wales.

These specimens gave the following results when submitted to analysis:—

			Conway Bridge.	Llangollen.
Sesquioxide of iron	...	...	92.900	93.094
Protoxide of iron	...	...	6.177	5.810
Carbonate of iron	...	...	0.507	0.605
Carbonate of lime	...	...	0.295	0.295
Silica	...	...	0.121	0.196
Ammonia	...	...	trace	trace
			100.000	100.000

These results clearly show the correctness of Sir Charles Fox's statements that the composition of the rust of iron is far more complicated than it is stated in our text-books. Therefore, the question may be asked, is the oxidation of iron due to the direct action of the atmosphere, or to the decomposition of its aqueous vapour, or does the very small quantity of carbonic acid which it contains determine or intensify the oxidation of metallic iron? To reply to these queries, I have made a long series of experiments, extending over two years, which I hope will tend to throw some light on this very important question; and, although it appeared to me an easy matter to solve, still I have had many difficulties to overcome, which will be described as they occurred in the course of my investigations.

The first series of experiments consisted in placing crinoline and steel wires, very carefully cleaned, in tubes containing pure, dry, or moist oxygen; and, in another series of tubes, containing the same gases, were added 1 per cent. of carbonic acid or a trace of ammonia.

Before describing the facts observed, I must state that the oxygen was prepared from pure chlorate of potash, mixed with a little binoxide of manganese, and the gas obtained passed through several feet of U-tubes, filled with glass, moistened with sulphuric acid and caustic potash. The carbonic acid was purified by washing it with water and passing it through U-tubes containing sulphuric acid. The ammonia was purified by first passing it through a saturated solution of ammonia and then over caustic lime. These purified gases were then introduced into tubes having 1 centim. diameter, and 30 centims. in length, which had been previously filled with dry mercury, and containing an iron blade, to the bottom of which had been fixed a small mass of gutta serena, so as to isolate the iron from the mercury, and prevent galvanic currents.

The results of the above experiments were so unsatisfactory that I was led to infer that I had overlooked some source of error; and it was so,

small globules of mercury having adhered to the perfectly polished surfaces of the iron, had become centres of galvanic action—determining the oxidation on the blades, and thus rendering the series of experiments discordant.

To overcome this source of error, cleaned blades of steel and iron, having a gutta percha mass at one end, were introduced into similar tubes to those employed in the previous experiments, and were placed over a mercury trough; the atmospheric air was displaced by a current of pure oxygen conducted to the top of the experimental tube, and it was then easy to introduce into them traces of moisture, carbonic acid, and ammonia. After a period of four months the blades of iron so exposed gave the following results:—

Dry oxygen	...	...	...	No oxidation.
Damp oxygen	...	...	...	In three experiments; only one blade slightly oxidized.
Dry carbonic acid	
Damp carbonic acid	...	...	...	Slight appearance of a white precipitate on the surface of the iron—found to be carbonate of iron; two only out of six experiments did not give this result.
Dry carbonic acid and oxygen	
Damp oxygen and carbonic acid...	...	...	...	Oxidation most rapid, a few hours being sufficient; the blade assumed a dark green colour, which then turned brown ochre.
Dry oxygen and ammonia	
Damp oxygen and ammonia	...	...	...	No oxidation.

The above results prove that under the conditions described, pure and dry oxygen does not determine the oxidation of iron; that moist oxygen has only a feeble action; dry or moist pure carbonic acid has no action, but that oxygen containing traces of carbonic acid acts most rapidly on iron, giving rise to protoxide of iron, then to carbonate of the same oxide, and lastly to a mixture of saline oxide and hydrate of sesquioxide.

As these facts tend to show that carbonic acid is the agent which determines the oxidation of iron, I am justified in assuming that it is the presence of carbonic acid in the atmosphere, and not its oxygen or aqueous vapour, which determines the oxidation of iron in common air.* Although this statement may be objected to at first sight, on the ground

* These results prove the statement of Bonsdorff (see Gmelin, vol. v., p. 185) that carbonic acid has no action on iron, is incorrect.

of the small amount of carbonic acid gas existing in the atmosphere, still we must bear in mind that a piece of iron, when exposed to its influences, comes in contact with large quantities of carbonic acid during twenty-four hours.

These results appeared so interesting that I decided to institute several series of experiments.

First Series.—Perfectly cleaned blades of iron, placed in bottles filled with ordinary Manchester water, were rapidly covered with rust, whilst similar blades, placed in the same water previously deprived of air and carbonic acid by boiling, remained free from rust, for a period of four weeks; thus proving that oxygen and carbonic acid are necessary for the production of oxide of iron in presence of water.

Second Series.—Into bottles filled with some pure distilled water (which had been boiled and then allowed to cool in corked flasks) blades of iron were introduced, and a part of the water in the bottles was displaced by common air, pure oxygen, or carbonic acid gas; but the results were unsatisfactory. I therefore decided to keep the upper part of the blade dry; to effect this, clean blades of crinoline wire were introduced into bottles containing pure oxygen, and then boiled, and cooled distilled water was introduced by means of an aspirator until only half the blades were immersed in the water. By this method I was enabled to ascertain the comparative degree of oxidation of that part of the blade dipping in the water, and the results observed were as follows:—

The section of the blades out of the water remained bright for several days, whilst that in the water became attacked in about six or twelve hours; and the deposit increased so quickly that, after two or three days, the blade was entirely covered with an ochre deposit of the hydrated sesquioxide of iron. This rapid oxidation of iron, under these circumstances, appeared to me to be entirely due to a galvanic current; for the oxide was deposited in two separate columns, which left the outside edges of the blade perfectly bright as well as the centre of it, each separate column apparently representing the poles of a battery. In fact, the production of this precipitate was so rapid that, after a short time a considerable amount was found as a deposit in the bottle.

To be certain that the oxidation of the immersed portion of the blade was not due to the fixation of oxygen dissolved in the fluid, but to the decomposition of water through a galvanic current, I examined the gaseous mixtures existing in the upper part of the bottle, and found hydrogen in large quantities, thus proving that the water had been decomposed, its oxygen being fixed by the iron, whilst the hydrogen was liberated.

ACTION OF OXYGEN-CARBONIC ACID ON IRON IN PRESENCE OF WATER.

To ascertain the influence which carbonic acid exerts on the oxidation of iron, I prepared mixtures of oxygen and carbonic acid in the following proportions :—

25	of oxygen	to	75	of carbonic acid.
50	„		50	„
75	„		25	„
84	„		16	„
88	„		12	„

Having introduced iron blades and the above gaseous mixtures into bottles, they were inverted over water so that their necks dipped into this fluid ; when half the gaseous mixture had been displaced by aspiration, as in the previous experiments, the following results were obtained—viz., whilst that portion of the blade standing out of the water in the previous experiments remained for weeks unoxidized, in this series the same section of the blade assumed rapidly a dark colour, which became afterwards of a dark brown. This change of colour was no doubt due—first, to the formation of carbonate of the protoxide of iron, mixed with carbon existing in the iron, and then the excess of oxygen in the mixture converted the carbonate into magnetic or saline oxide of iron. Whilst these phenomena were proceeding with that portion of the blade exposed to the gaseous atmosphere, the one dipping into the aqueous solutions was observed to lose its brilliant and metallic lustre in a few minutes, presenting a black appearance, which became, at the end of three hours, of a dark greenish hue, due to the formation of similar compounds as those above described.

In all these experiments the water became not only turbid after a short time, but, on the surface of the same, floated a considerable amount of magnetic oxide and carbonate of the protoxide of iron, and which varied in quantity according to the relative proportions of oxygen and carbonic acid employed. This series of experiments confirms again the previous ones, that carbonic acid is a most active agent in determining the oxidation of iron.*

ACTION OF CARBONIC ACID ON IRON IN PRESENCE OF WATER.

Having studied the action of oxygen and of carbonic acid and oxygen on iron in the presence of water, I was desirous of ascertaining what would be the action of carbonic acid and water. I operated in a similar manner as in the previous experiments, and observed that the blades in the gaseous mixtures had assumed a dark grey appearance ; that in the liquid was black, the carbon having been rendered perceptible by the

* The composition of the various deposits above described was not assumed, but was determined by careful analysis.

iron having been dissolved as carbonate of protoxide of iron, soluble in the excess of the carbonic acid. After a few days, a perfectly white deposit was formed on the edge of the water, which gradually increased, and became so abundant that some fell to the bottom of the vessel. Water had been decomposed and hydrogen liberated.

I again made another experiment, which further illustrates that carbonic acid is the real determining agent of the oxidation of iron. Thus:—A blade of steel placed in pure water which had been previously deprived of all gaseous mixtures by long boiling, and then allowed to cool; the metal remains bright for several days, and when any signs of oxidation appeared, it was only on a few parts of the blade. The careful examination of this fact led me to infer that the limited action which had taken place might be attributed to traces of impurity in the iron; and this view was supported by the previous observations described, on the influence which minute globules of mercury exert on the oxidation of iron, as well as the known influence which a few thousandths of antimony, platinum, tungsten, sulphur, phosphorus, &c., impart to iron; and, again, the facts I published a few years ago, that by covering the one-hundredth part of a blade of iron with zinc, the whole of the blade is prevented from rusting when plunged in soft or sea water; whilst platinum, under the same circumstances, promotes, in a marked degree, the oxidation of iron. Therefore, if a minute quantity of a substance modifies the properties of iron so as to facilitate or retard its oxidation, we may, I think, fairly assume that any impurity in the purest steel (watch-springs) may give rise to the few specks of oxide which were observed in the steel placed in boiled distilled water.

Whilst I was engaged in the above experiments, it occurred to me that it might be useful to make a series with the view of throwing light, if possible, on a fact stated by Berzelius, and well known to alkali and soap manufacturers—viz., that caustic alkalies have the property, even when dilute, of preventing the oxidation of iron.

Do the alkalies possess the curious property of rendering the iron "passive," or, as Berzelius has supposed, is the iron in a negative electrical condition? This is a very difficult question to solve. From many observations I have made, I am led to believe that the iron is in a passive state; and this opinion is based, not only on the known data, that a blade of iron is not attacked by strong nitric acid, and that we have no electrical current if one fluid and one metal are brought in contact, whilst, if two fluids and a metal, or two metals and one fluid are employed, a galvanic current is generated. My experiments show that not only caustic alkalies possess this peculiar property, but also their carbonates and bicarbonates; and I hope that the following experiments will throw some light on this point. A blade of polished iron was

dipped into a solution of caustic soda, and at each end of the blade was attached a wire communicating with a galvano-multiplicator, and no galvanic current was generated; and, again, when blades of perfectly polished hoop-iron were placed in bottles half-filled with solutions of caustic alkali, carbonates, and bicarbonates containing from 1 to 5 per cent. of these compounds, and only a part of each blade was immersed in the solution, the other part being exposed to atmospheric air enclosed in the stoppered bottles, the results were, that after three months neither that portion of the blade dipping in the liquid, nor that in the atmosphere, was in any way rusted in the solutions containing 5 per cent. of alkali; and in the experiments with 1 to $2\frac{1}{2}$ per cent., only part of the blades out of the water were slightly oxidized.

I was much surprised to find that the carbonates and bicarbonates of the alkalies acted in the same manner as their hydrates in preventing the oxidation of iron, not only on that part of the blade immersed in the solutions but also on that which was exposed to a damp atmosphere of common air. Previously to obtaining these results, I was inclined to believe that caustic alkalies prevented the oxidation of iron by absorbing the carbonic acid of the atmosphere; but, as carbonates and even bicarbonates act in a similar manner, it is evident that this view of the action was erroneous.

The results above stated not coinciding with those obtained by Payen, and given in Gmelin (vol. v., p. 185), I repeated his experiments, and found that the portions of the blades of iron immersed in dilute alkaline solutions as described by him are preserved from oxidation, but that the portion out of the liquor becomes covered with oxide, which increases in inverse ratio to the strength of the solution, and that when the proportion of 1 part of the alkali to 2,000 parts of water is reached, the oxidation of the iron proceeds rapidly on that part of the blade just above the surface of the water.

This series of experiments confirms the opinion already expressed that the iron exists in a passive condition, and that this condition only attains sufficient power to resist oxidation by atmospheric oxygen when there is 5 per cent. of either hydrate or carbonates of alkalies in solution.

I have repeated also M. Payen's experiments on the preservative action of weak solutions of carbonate of soda, and find that my results do not correspond with his. He states that 1 part of a saturated solution of carbonate when diluted with 54 parts of water will preserve iron from rust, while 1 with 59 will not. I find that the iron rusts in both cases, thereby proving that stronger solutions are necessary to prevent oxidation.

I have made many experiments with the view of discovering the cause of this interesting preservative action which alkaline solutions exert on

iron, but have failed. Knowing the destructive influence which sea-water has on iron, and the serious injury done to iron ships through the action of bilge-water, a series of experiments were made with sea-water, to which was added such a quantity of caustic soda or potash or their carbonates that, after the salts of lime and magnesia were decomposed, there still remained in the solutions 1 to 5 per cent. of alkalies or the alkaline carbonates; and when iron blades were introduced into such liquids, they gave the same results as when iron had been dipped partially into an alkaline solution of Manchester water. I would propose, in conclusion, that a certain quantity of soda-ash should be introduced from time to time into the bilge-water of iron ships, as, by so doing, a great saving would be effected, as it would prevent the rapid destruction of such ships.

After reading the above paper, Mr. E. Hunt inquired whether I had made experiments to ascertain if the presence of caustic alkalies or their carbonates when mixed with sugar prevented the marked action of that substance on iron. Considering this a most important question to determine, as iron ships are rapidly destroyed when used for conveying sugar from the Colonies to this country, I instituted the following series of experiments:—

Blades of iron were partly immersed in a solution containing 10 per cent. of sugar, and in similar solutions to which had been added $2\frac{1}{2}$ to 5 per cent. of caustic and carbonate of soda; after a month, the same results were obtained with the saccharine as with the aqueous solutions. But as it would be impracticable to use solutions of caustic or carbonated alkalies in the holds of ships laden with sugar, I thought it therefore advisable to try what might be the influence of zinc when attached to iron in preventing its oxidation, and am glad to say that a piece of zinc, covering about the fiftieth part of the blade, preserves the iron from rusting in that part of the blade immersed in the sugar solution. The use, therefore, of plates of zinc fixed on the sides of an iron vessel, or, perhaps better, the employment of galvanized iron plates in the construction of ships, deserves the attention of shipowners.

CONSULAR APPOINTMENTS.—**FOREIGN OFFICE, Aug. 6.**—The Queen has been pleased to appoint Captain Richard Francis Burton, lately Her Majesty's Consul at Damascus, to be Her Majesty's Consul at Trieste, with jurisdiction in all the commercial ports of Austria, the port and district of Ragusa excepted. **Sept. 17.**—The Queen has been pleased to approve of Mr. Josiah M. Lucas as Consul, at Tunstal, for the United States of America.

THE BOARD OF TRADE RULE FOR SAFETY VALVES.

(A Paper read before the Institution of Engineers and Shipbuilders in Scotland. By Mr. JAMES HOWDEN.)

THIS paper, of which a copy has been kindly sent to us, is one of the many attacks on what the writers are pleased to call "the Board of Trade rule" for determining the area of safety valves. Such papers as these are of great value to the public. Engineers, like most other people, grumble when anything troubles them, and it is a fashion with many engineers to lay their grievances at the door of the Board of Trade; but they seldom do, as Mr. Howden has done on this occasion, put their charges into definite language. Mr. Howden must be congratulated, for he has honestly, and in a remarkably straightforward way, told us how he thinks this matter of safety-valve area stands; how it affects the shipowner and the engineer, and how he thinks it might be rectified.

We have condensed the paper, retaining, as far as possible, the words of the author, and we have also rectified a few very important arithmetical errors in it. Our rectifications are embodied in the following table, and are, for the sake of convenience, placed immediately below Mr. Howden's own figures. If Mr. Howden is otherwise correct, the conclusion he must now accept, from his own paper, is that, the rule so long in use with manufacturers (and no doubt sanctioned by the Board of Trade, because it is used by manufacturers) is remarkably coincident with the requirements of the case, as established by Mr. Howden: for it gives a value just a little too small, but one that, with reasonable care, might be continued without increasing the proportion of half a square inch per square foot of fire grate. Mr. Howden's paper is substantially as follows:—

The Board of Trade have hitherto ignored the question of pressure in dealing with safety valves, and have insisted on their rule of '5 of a square inch per square foot of fire grate for the valves of a boiler made to work at 100 lbs. pressure, as well as for one made to work at 10 lbs. pressure. This rule quite overlooks the well-known fact, that steam as it increases in pressure increases also in density, and in velocity of escape into the atmosphere.

Before the fitness of a rule for finding the proper area of a safety valve for any given power of boiler, working at any given pressure, can be judged of, it is necessary to consider the four following points in order to arrive at a proper basis of calculation:—

First. The amount of water the boiler is capable of evaporating in a given time, or, in other words, the power of the boiler. Let the rate of combustion be taken at 20 lbs. of coal per foot of fire grate per hour, and the evaporation at 7 lbs. per pound of coal, or 140 lbs. of steam per square foot of fire grate per hour.

Second. The maximum pressure at which the boiler is constructed to work. In calculating the total weights or quantities of steam of different pressures that

can be discharged in a given time from the same area of orifice, it will be found that the discharge is not only greater in the case of the higher pressure by the increase of velocity or increase of density alone, but by the increase of velocity multiplied by the increase of density; hence the impropriety of requiring the same size of orifice for all pressures. As marine boilers, especially, become, in course of time, weaker, in consequence of the wasting of the plates and fastenings, the safety valve, being a permanent fitting, must be made to be sufficient for the lower working pressure to which the boiler may be reduced on account of this deterioration.

Third. The area of the orifice through which the whole steam evaporated by any boiler—working under the conditions assumed in regard to consumption of fuel and evaporation—could be discharged into the atmosphere at different pressures, it simplifies the calculations if we find the weight of steam that can be discharged at these different pressures through an orifice one square inch in area. The following calculations are for pressures, ranging from 10 to 100 lbs. per square inch above the atmosphere, advancing by 10 lbs., as in the annexed table.

The substance of five tables in Mr. Howden's paper are here arranged in one Table, being the lines marked H—viz., 2, 4, 6, 8, 10, 13 and 14. The lines marked T—viz., 3, 5, 7, 9, 11 and 12, are the corrections referred to above, which we have made in accordance with the principles of the manufacturers' rule, by which Board of Trade surveyors are guided. If Mr. Howden will take any one of the velocities given by him, and fix any pressure whatever, as that which the steam will have in escaping when passing the throat of the orifice, he can then calculate what *work* one pound weight of the steam will have *done* in expanding from the boiler pressure to that pressure; and by applying that to give motion to a body weighing one pound, he will arrive at the velocity of the *atoms* of the steam at the throat. He must then reduce that velocity in the proportion that the volume of the steam, when in the boiler, is less than its volume after expansion, when in the throat; because the "*densities*" (*specific volumes*) he uses, refer to the steam *before expansion*. It may be that Mr. Howden has made this mistake, merely applied the atomic velocity at the orifice to the original volume of the steam, instead of to its volume at the instant for which the atomic velocity was taken. The expression "velocity of steam" can, strictly, only mean atomic velocity. Mr. Howden should have avoided misapplying the word velocity, and used instead "rate of efflux." He might then have held his subject clearer before his own mind, and certainly would have made it more intelligible to his readers, and probably would also have escaped committing the error we are now rectifying.

Attention has, more especially since the recent general increase in steam pressure, been much directed to the subject under consideration, and many of the Board of Trade surveyors have expressed very decided opinions to us, on the soundness of the present rule of half an inch per foot of fire grate. We must confess that, the more we hear

H 1	Pressures ...	...	10	20	30	40	50	60	70	80	90	100	lbs. sq. in.
H 2	Densities ...	...	1042	765	608	506	434	381	340	307	281	259	water, 1
T 3	Should be sp. volumes	...	996	726	572	474	405	353	314	283	257	237	water, 1
H 4	Velocities ...	...	1241	1504	1643	1729	1791	1898	1877	1919	1936	1957	ft. per second
T 5	Should be rates of efflux	...	858	867	873	878	882	886	889	892	893	898	ft. per second
H 6	Weights ...	...	31	51	70	89	107	125	143	162	179	196	lbs. avoird.
T 7	Should be ...	...	22	31	39	48	57	66	74	82	90	98	lbs. per minute
H 8	Orifice area required for { 72 square feet fire grate }	...	5.42	8.8	2.4	1.88	1.57	1.34	1.17	1.03	.94	.85	sq. in.
T 9	Should be ...	...	7.64	5.42	4.31	3.50	2.95	2.54	2.27	2.05	1.86	1.71	sq. in.
H 10	Areas A = $\frac{G}{3\sqrt{P}}$	...	33.48	26.56	23.22	21.05	19.56	18.41	17.47	16.74	16.07	15.51	sq. in.
T 11	{ If increased in the propor- tion that line 9 exceeds line 8 }	...	47	43	41	39	36	34	33	33	31	31	sq. in.
T 12	{ Increased in the proportion of lift to opening }	...	66	61	58	55	51	48	47	46	44	43	sq. in.
H 13	{ Lifts required to give escape orifices, line 8 or line 9 }	...	0.265	0.182	0.137	0.114	0.100	0.085	0.078	0.069	0.067	0.060	inches
H 14	Maximum lifts	...	$\frac{1}{4}$	$\frac{1}{4}$	$\frac{1}{4}$	$\frac{1}{4}$	$\frac{1}{4}$	$\frac{1}{4}$	$\frac{1}{4}$	$\frac{1}{4}$	$\frac{1}{4}$	$\frac{1}{4}$	inch

against it the less are we inclined to advocate a departure from it. Over and again have we had presented to us extravagant statements as to the "velocity of steam," and the excessive amount of area of valve; but these statements are, in general, either indefinite, or are speculations and theorizings, as is this paper by Mr. Howden. The surveyors have, we think, gone to the root of the matter, and in our February number we gave one out of several similar papers, on the same subject, written by different surveyors, and our corrections of Mr. Howden's paper are in accordance with the statements contained in papers sent us by them. We are glad that Mr. Howden has given expression to his views as to the practicable amount of lift of valve, because he has thereby put into the hand of the public, statements which he will consider himself bound to defend. If we also accept of his statements, he must be on our side, although we build upon them quite a different structure from the one he purposed to rear upon them.

Line No. 2, he says:—

Gives the densities at the various pressures, from 10 lbs. above the atmosphere, or 25 lbs. absolute pressure, water being unity.

But here it is evident he means, not "density," but the inverse of it—viz., "specific volume." The table gives the density of steam at 10 lbs. pressure to be 1042 times that of water, but even gold is not 20 times the density of water. Line 8 gives more accurately the specific volumes of steam at the different pressures.

Line 4, he says:—

Gives the velocities in feet per second at which steam of the various pressures given will flow into the atmosphere. The velocities here given are those due to a free escape into the atmosphere, and may be reduced by the character of the orifice.

We have already commented on the great disparity between these values, and those given as "rate of efflux" in line 5, being our correction of line 5.

Line No. 6, he says:—

Gives the weight of steam in pounds at the above pressures, which would escape into the atmosphere through an orifice, one square inch in area, in one minute, and is calculated from the densities and velocities given in lines 2 and 4.

For the purpose of applying these figures practically, take as an example, a boiler having 72 square feet of fire grate, with an evaporation not exceeding $72 \times 20 \times 7 = 10,080$ lbs. of water per hour, or 168 lbs. per minute. We can calculate from line No. 6, the different areas of the orifices through which the whole steam generated by this boiler at all the different pressures from 10 lbs. to 100 lbs. would escape into the atmosphere. These areas are given in line No. 8. We have here the areas of the orifices through which the whole of the steam that this boiler could generate would escape into the atmosphere under continuous firing, and with the engines stopped—the most extreme case that we can possibly conceive accidentally occurring, and therefore no greater safety would be attained by providing orifices of greater areas than are here

given. It would, however, be a mistake to suppose that safety valves of the diameters which give the above areas would be sufficiently large in actual practice; for this would infer that the several valves would safely rise from their seats one-fourth of their diameter—an amount of lift both unsafe and impracticable.

Lines No. 7 and No. 9 are our corrections of lines 6 and 8. If Mr. Howden will, himself, work out the velocities and weights from first principles, instead of from an erroneous empiric formula, he will corroborate the values we have given on these lines. The area of orifice required for 100 lbs. should be just the double of what he gives for it, and for all the pressures there is a great difference between the two lines, and with any ordinary conical valve and with the maximum lift as he gives it, it would actually be necessary to use for every one of the pressures given a larger valve than that required by the Board of Trade rule.

Again:—

Fourth. The safe amount of rise or lift in proportion to diameter of and load to be allowed in calculating the area of escape orifices; only a very small lift is practically safe on board a ship at sea. A safety valve loaded either directly or by lever and weight can only rise from its seat a very small amount without danger of jamming or otherwise being injured, and the safe amount of lift also varies in proportion to the weight carried by the valve as well as in proportion to its diameter—the greater the weight carried the less the lift to be allowed. A proper rule, therefore, should provide for a limited lift in all cases, and for the lift being reduced in proportion to the increase of weight carried.

In Mr. Holt's experiments, as contained in the Board of Trade circular, a lift of 9-16ths of an inch for a valve of 2½ inches diameter is apparently assumed as not too much for a valve of that diameter. Such an amount of lift for a valve of that diameter is quite impracticable, one-fourth of the amount, even with a low pressure, is the utmost limit that should be calculated on as a safe lift for a valve of that diameter. The rule proposed is based upon the foregoing calculations and data, and is believed fully to meet all the requirements. It is as follows:—

To find the area of the safety valve. Divide the fire grate surface in square feet by the cube root of the maximum working pressure in lbs.; the quotient is the area of the safety valve in square inches, or, as an equation:—

$$A = \frac{G}{\sqrt[3]{P}}$$

The effect of this rule, and its comparison with the Board of Trade rule, will be clearly seen by its application to the case of the example boiler already referred to at the various pressures in the table, at line No. 10. The amount of lift in each case necessary for the discharge of the whole steam generated at these pressures is given on line No. 13. Line No. 14 contains the maximum amount of lift proposed for the valves with their different diameters and loads. It is supposed amply to provide for any reduction in pressure that the boiler may be subject to, and still keeps the lifts within a safe limit. It will be observed that for the higher pressures where necessarily a considerable load is carried, the rule provides for a greatly diminished lift."

Mr. Howden then proceeds to point out the practical effect of the adoption of his rule ; but, as by correcting the errors of his tables, we have changed the character of that effect from a reduction to an enlargement of the proportion now adopted by makers, perhaps the less we say the better about the advantage that Mr. Howden thinks would accrue to " the steam shipping of the United Kingdom " if his rule were to be adopted.

Line No. 11 gives the areas required on the principles advocated by Mr. Howden. The errors in his calculation are corrected, and the area proportionately increased. The practice of the surveyors is to require an area of 86 square inches for the valve of the boiler referred to. The numbers on line No. 11 from 50 pounds to 100 pounds remarkably coincide with this required area. But he has all along omitted to rectify the lift to give the proper opening at right angles to the course of the steam. The axis of the section of escaping steam will even with a flat bearing approximately bisect the angle formed by the valve and its seat ; but with a conical valve, which is the common form, this will be strictly true ; and the *opening* will, therefore, be to the lift, as 1 to 1.414. Line 12 gives the area with this correction, and in every case it is much in excess of the area now adopted by the manufacturers and accepted by the Board of Trade, which is 86 square inches, the same for all the pressures. For even 100 pounds pressure, therefore, Mr. Howden would recommend a valve 20 per cent. larger than that now required. For 20 pounds of steam he would recommend an increase of 70 per cent. on present proportions, and so on.

Looking to the increasing pressure now employed in steamers, it appears to us that the Board of Trade are only exercising a due diligence in keeping on their guard to sift thoroughly any plausible appeal for the alteration of an important rule, such as this is. On the other hand, the Board are doing what is right in permitting the use of spring loaded safety valves of approved construction.

Mr. Howden concludes his paper by making an important suggestion—viz., that the Board should allow one half of the valve area required to be spring loaded. The Board have, we safely assert, never objected to springs *per se* ; but, as many of our readers know, they have objected to faulty arrangements proposed from time to time for spring loaded valves. Immediately an unobjectionable design was submitted to them, they permitted its use, and they actually did this in the first place as Mr. Howden now suggests that they should do. Mr. Howden, therefore, only corroborates the propriety of the Board's action in this matter. Some of the steamers that have had one spring valve on each boiler on probation, have some time since been passed to have all the valves spring loaded ; and the firms connected with them having gained reasonable

experience of the sufficiency of the form of spring valve they have used, can now make similar valves for all their steamers, thus dispensing altogether with dead weight valves. On the whole, then, we say that as dead weights may be dispensed with in the loading of safety valves, and as even according to Mr. Howden's own showing the present valves are not too large, there is, at all events, at the present time not very much occasion for the Board of Trade to interfere to upset the manufacturers' rules as to the size of safety valves.

FOK'S'LE YARNS

ON BOARD THE "OCEAN WAVE."

BY W. F. PEACOCK.

No. 5.—"EVIL IS WROUGHT BY WANT OF THOUGH."

It was Jack Berney's turn at the helm. I don't mean that literally, but in the sense of spinning the next yarn, and everybody knew it would be an interesting one, because, with all Jack's dash and off-handedness, he was a sailor of more than average education, and his former position had been greatly superior to his present. While Jack was pullin himself together for a fair start Joe Harbidge (whose infirmity to say uncalled-for things had previously brought him a well-merited and *striking* reproof administered at fist-end by Paddy O'Hara) managed again to raise a temporary storm which, as usual, terminated in his complete discomfiture: and on this occasion the circumstances were very special and noteworthy.

As thus:—

A number of the crew had been talking about ships as they were and as they are; and an allusion was made to life-buoys as now constructed, and to sleeping accommodation for seamen. Says Joe Harbidge, "Well, you may have your opinions, in course, but *I'll* have mine. I don't speak mountainously ye see, (*mutinously*, he meant), but I've no high belief in them there life-buoys nor a lot of other things as Government causes us to carry. I thinks 'em fiddle-faddle!"

By the Ghost of rude Boreas, what a storm he raised with that last expression! Bob Harris, and seven or eight more, came down upon Joe like so many indignant waterspouts; a regular deluge.

"Why, you tarnation imperfect-speaking Judas Iscar'otly swab!" said Bob Harris, "you dar' to find fault with what our Gov'ments dono

for us! You ought to have a hundred million dozen at the fo'mast swifteys an' then be keelhauled till the Day of Judgment and arter! Why, I'm not a scholar like some, but don't I know as that there great and glorious con-gregation of mighty rulers as takes care of our lives at head-quarters is always a studyin' and a tryin' what to do for us as sails the seas? I says as that there line in the Prayer-book ought to be applied to them wonderful Dukeses and Earlses and Big Guns as com-poses our Board of Trade, 'cause they devotes themselves for our good, and they is a 'noble army of martyrs,' givin' their time an' everythink else to do us sarvice."

"Yes," said Tom Joyce; "Who have you got to thank for the life-Saving *Happyrats*? What's the old sort of life-buoys compared to those we have at present? Don't I remember when them there Dooks on that there Board of itself caused a sarching ink-wiry to be made into the construction of 'em, and did'nt they come down heavy on ship chandlers as had supplied common things filled with straw and rubbitch?"

"I'm ashamed of you, Joe Harbidge," said Sheky Jenkins. "I'd sooner run my country nor say a word against it about *them* subjecks. Why! you knows less than a hebony papoose! Bless my eyes! when we was last in port, did'nt you see a great Government Ossifer a over-haulin' the Bunks in our *Ocean Wave*, an' parsonally taking care as all was right taut for our comfort afore we sailed? Yes, not a common swab like *you*, but a wery hairystocratick an' magestical indiwidduel as is, I've no manner of doubt, a near relation to the Royal Fam'ly an' the maids of honour and the Lord Mayor, too! Why, I don't know 'zactly, but I'm sartain sure that there condescendin' Pottentot as took so much trouble to examine the spaces and see to our lights an' trimmings was at least a High Marshall, Double Deputy Knight of the Government First Chop Admiralty Order of the Bath and Commander's Chief Cabin. Mo-nackical Dispensatories for England an' all parts,—an' no Jack Tar can't say more!" With which brilliant and unparalleled peroration, the result of intense and deliberate exertion, made more emphatic by occasional pauses for breath and words, Sheky Jenkins concluded with a triumphant glance at the discomfited Joe.

Then followed the clear and subdued castigation of Rufe Underwood "I don't use hard words, mate," said he to Harbidge; "but if you knew more you'd be proud of the Government and Parliament; instead of running them down. Time won't allow me to mention a hundred big things it's done for Mercantile Marine; but only think of a few ordinary ones, even! There's the improvement in life-buoys you speak about. And think of the Savings Banks and Money Orders; why a man as is true to himself will find all sorts of good prepared for him

instead of trusting to those piratical crimps (as I've seen at all hours in the morning, when I've taken a turn on shore), awaiting for 'Jack' like the land sharks they are, and ready to strip him of pay and character, and everything down to the shirt he stands in! And look at the improvement that has been steadily thought about? Why, the Merchant Shipping Acts are a golden treasure in themselves; not to speak of the excellent rules and regulations for paying seamen and allowing them the fair but orderly rights of men. No, No, Harbidge! never you say a word against the Government."

"Leastways," added Saul Diggs, the Joe Miller of the ship; "as its clear to me as Harbidge is wrong, still I agree with him in one respect,—as far as consarns himself, I think as a life-buoy would be quite thrown away, as there's some persons who is much more adapted to the next world than to this here! For instance, them grumblers as finds unnecessary fault with Boards of Tradeses, and such like institutions!"

Poor Joe Harbidge! the combined thunders had subdued him; and when Jack Berney commenced his yarn, perhaps the loudest applause came from Joe, because the change of subject saved him from any further castigation; but, anyway, Joe would have escaped it, as he had, at this juncture, to go upon deck to relieve the helm. I may add that we were running before a fair breeze. *Ocean Wave* and her crew right and merry as the captain's monkey; all going well, plenty of water beneath us, and enough of everything on board, steering for Ascension, with the bright waves dancing in the glorious sun, and the serene blue sky overhead.

"I wasn't always a sailor," began Jack. "At the time my yarn starts I was assistant to a saddler in one of the prettiest seaport towns in all England. I think it was the ocean view we had from our front windows that first gave me a feeling for salt water. However the rights or wrongs of that maybe doesn't matter now, as I'm not going to speak so much of myself as of others.

"I can see that town in my memory as clearly as though I were there at this moment. It was a place not to be forgotten, though, since then, its become three times as big, and many of the country walks are now built over with gentlefolks houses. There were, as we said, two halves to it, and known as the Old and the New; and it had two shores—the North and the South. The town, you see, lay between them, like the body of a sea-bird between its wings, or a populated islet, with lagoons at either side. The breast of this town was formed by an old castle, high up above the cliffs; and what I may call its beak was the pier which jutted out and terminated in a lighthouse, as though it were something white and bright as the town had picked out of the ocean, and held in its mouth, bird-fashion! Standing in the castle-ground, and

looking inland, you could see a noble, shapely, well-wooded hill, rising from the level meadows as a green knoll rises from the prairie; and because the story was, that in days gone by Cromwell had besieged the town from this hill (and, indeed, there's some cannon balls of his shown in the little museum), the hill itself went by the name of Oliver's Mount. And there were many pleasant nooks and quiet spots nigh to this hill; and often the townfolk would go there to have their fortunes told by gipsies, who pitched their tents in those secluded places, and set off the brown depths of the groves, and the rich green of the leaves, and the emerald velvet of the grassy slopes, with their own dark eyes and olive faces, and gay all-colored dress.

"My master, the saddler, had a wife, but no children, and they'd been childless from their wedding-day, thirty years before. A quiet and loving couple they were as ever you set eyes on; and I think the only wish they had was to have 'someone to love,' as the song says. But there's always a want for everybody, and it was so in their case. With their hearts set upon a little son or daughter, it was denied them. And I expect this feeling arose out of their love for each other, for I remember once, when master was very melancholy (though his rule was generally quite the reverse, being naturally cheerful minded), 'John,' said he to me, 'When I'm dead, I wonder what will become of my wife. We're the last of our family, and she'll be all alone—alone!' and he sighed so heavily, you can't imagine. Master, you see, had only one nephew (a dead brother's son), and this boy had gone off to sea three years before, and the ship been reported lost with all on board.

"Well, months went on, and at last there came a bright sunbeam into the little parlour. Master and mistress had advertised for an orphan, and been successful; and a tiny, young, dimpled-faced, soft-spoken girl about seven years of age became their adopted daughter. She went to school in the day, but her very absence made the house the happier, because everybody knew her school hours and the minute to expect her 'home' again; and so, when she ran in to dinner or to tea, what a welcome little Mirror had, and how the room seemed to flush all over with joy and satisfaction! I'll tell you why they called her Mirror. Mistress's name, you see—her Christian name—was Miranda, and Miranda may be playfully altered to that.

"So the little girl came to be called Mirror, and not unfitly, for she was as pure, and glistening, and unruffled as one, and quite a house ornament. There were more lights danced in her laughing young eyes than in any wall-glass I ever saw on the sunniest day.

"Four years after she came to make the old couple happy, master fell ill and died."

"Went where de good niggers go, like poor Uncle Ned, poor old Snowball," said Mr. Bucky, half audibly.

"Kick the nigger's shins," said Sheky Jenkins. Mr. Bucky was quieted. Indeed, he had not meant to interrupt, and the yarn went on:—

"I needn't tell you how great was the widow's affliction, but they had lived well together, and they hoped to meet again. When master kissed his old wife for the last time it was more like bidding good-bye for a year or two on earth; and not as though the separation were from world to world. So I think there's something in happy living; but I'll not moralise, as my business isn't the parson's."

"No, bedad," said Paddy O'Hara.

"Well, little Mirror came from school 'for good,' and was everything to her foster-mother. About that time who should come back but master's dead brother's son—the nephew! He had, it seemed, run away from the ship before she was lost; and, after many rambling adventures, had turned up at last to see his old aunt and uncle—but his uncle was dead, you know. So here were they met, aunt and nephew, the only two left in the world, and little Mirror. This nephew was a fine warm-hearted young fellow, some six years older than the girl. Having nothing to do, and his aunt being naturally fond of him, he took up his quarters with us, and by-and-bye entered into the business. When mistress herself died, only two years later, she left all to her nephew Percival (we'll give him his name in future), and he carried on the saddlery, not being particularly clever in it himself, because, you see, he'd not served an apprenticeship or taken an active part, but managing well enough with me and two others.

"Little Mirror went to school again for another three years; and when she left it to come back it was in accordance with the dying wish of her adopted mother. For, you see, she and Percival regarded each other as cousins, and it was easy to see that there was a growing affection on both sides. So Mirror took charge of the house and was recognised as its young mistress, she being then between sixteen and seventeen years old, while Percival was in his twenty-third. As an old servant they made much of me, and I soon saw that Percival was deeply in love with Mirror. I'm not going to spin out my yarn with a description of her; it's enough to say that she was, at this time, a young lady likely to charm a score of men less ardent than her lover. She had education and good manners, and plenty of what people call address."

"Be the powers, ye wouldn't have the swate Colleen appare in the costume of Eve before the fall, would ye, now," said Paddy.

"Belay there," said Bob Harris, using his curry-comb, and spitting straight out. This produced silence, and the speaker continued:—

"Her great drawback was her love of admiration, and to gain it she would sometimes affect to disparage Percival, even when she liked him the most. Now, Percival's nature was peculiar; very ardent, as I said, full of truth

and sincerity; but, just as warm as he was at heart, so any believed slight from another would rankle in him and cause him incalculable pain, not producing a revengeful effect, but making him utterly miserable, and, perhaps, prone to think more of slights than he ought to have done. When a nature is very delicate the least scratch is felt; and what a rough skin would laugh at the soft hand shudders before. I think, then, that when such delicately-formed minds are in question we ought to be careful not to hurt them needlessly; for who can say where the effect may end?

“So time passed, and Mirror and Percival were engaged. He made a confidant of me, because I was, from my old mistress's time, looked upon as the third in the house, there being only three. Percival and Mirror often went out to the Castle, and the pier, and the North and South shores, and once they had their fortunes told by an old gipsy at the foot of Oliver's Mount. I noticed a gloom over them when they came in, and I asked Percival during tea (I being the third of ‘the family!’) if he was not well. He told me, with a half laugh. ‘Why, John,’ says he, ‘we've been consulting old Mother Redcap and crossed her hand, and she told me to beware of the water, because I should never die on land.’

“‘And that's just like those people,’ said Mirror. ‘I dare say she had heard of your escape before, and so invented her prediction. For myself, I think the sea is favourably inclined to you, Percy, or you would not have been the only one of the crew saved when your ship was lost.’

“And Mirror brightened up; and presently so did Percival, and we all laughed more or less heartily at the old gipsy's prediction.

“‘How should a wrinkled crone know the secrets of the future, and the mysteries of earth and sea?’ said Percival. ‘Tut, tut! I suppose the knowledge grows out of the shilling! a matter of mere invention, aided by acquaintance with past facts, and shrewdness in guessing what might happen. I'll take another cup of tea, Mirror, please!’ So the gipsy and her prediction passed away for the time.

“Merrick, my old master, had always laid himself out to do a business with the country squires, and often there would be two or three grooms in the shop, with orders for saddles to be re-covered, or harness to be re-plated, or martingales to be repaired, or half a dozen tins of polishing-paste, or a set of curry-combs. Sometimes, too, the squires would look in, and sometimes their sons. And, occasionally, some young fashionable splint or other would accept Merrick's respectful invitation to taste his new spirits (or rather old ones, just out of bond). So it was a casual thing for Merrick to sit down for an hour, to smoke and enjoy his glass with the young squire—because, you see, Merrick had a good eye to

business, and wished to ingratiate himself. There was one squire's son, named Nesfield, who was particularly sociable, but he bore the character of a scapegrace. His manners were pleasant and winning, and from having been on such good terms with Merrick, he kept his footing in the house. Percival never liked him, but it was difficult for a young tradesman to take umbrage when there seemed no occasion; and now and then Nesfield would pop in about tea-time. He generally bought something handsome, and in his off-hand way he'd throw out an unmistakeable and unavoidable hint that a cup of tea would be appreciated. So, at odd times, he formed one of our tea-takers, Mirror officiating. I know not what cause there might be, but certain it is that I have seen Percival's glance covertly addressed towards him and Mirror, and, occasionally, after he had left, Mirror would appear less cheerful than was her wont.

"A month or two after the gipsy's prediction, there was to be an excursion by steamer to a seaport some thirty miles from ours; and we were to start in the bright afternoon, get to the place by tea-time, be allowed four hours there, and return so as to reach home before midnight; thus enjoying the peculiar pleasure of a night sail in the soft summer air. Mirror was earnest to go, and Percival felt inclined, also. We—myself being included—joined the excursionists, as it was easy to leave the men in charge of the shop for so short a time between the dinner and usual hour of closing.

"A merry afternoon and evening we had. Starting back by the steamer in the calm evening a dance was arranged, and the festivities grew general. I forgot to say that young Nesfield was on board, though he had as yet simply raised his hat to Mirror and Percival; but after some dancing he came forward and requested Mirror's hand for the next. She gave it blushing, and, I thought, with a degree of satisfied vanity; and they stood up. I saw Percival's face change, and when the dance ceased he was no longer on deck. Mirror and I found him below, pleading a headache. Perhaps a heartache might have been nearer. He had been very cheerful, and now he was so low, poor fellow! Mirror tried to rally him, but he took her fun in wrong part, and there was an end to our pleasure. At last she went on deck; and I think that was to induce Percival to follow her, as she had repeatedly asked him to take her up.

"'Well,' said she, gaily, 'if you won't go, I shall see what the dancers are doing.'

"'And Mr. Nesfield!' said Percival with a half-frown.

"Now Mirror was as high-spirited as any Arab steed, and the blood mounted to her brow as she thoughtlessly or heedlessly retorted, 'And Mr. Nesfield, of course! He's a gentleman, at any rate!' and was gone."

"Jist like the darlints," said Paddy, but he was stopped short by a kick from Rufe Underwood.

"I saw a sickening pallor come over the face of Percival, and I said, 'It's only her joke! Don't take it wrongly! Let me get you a glass of brandy!' and I looked about for the steward. As he happened to be above, I said, 'I'll fetch you a drop in half a moment;' and with that ran up the ladder. As true as you live, the first thing I saw was Mirror just standing up again with Nesfield. I turned to look for the steward, and as I did so, Percival came up the ladder hastily. His eye took in everything, and before I could prevent him he had rushed past me, was over the ship's side, and the next second I heard the cry, '*Man overboard!*' Certainly he might have been saved, for the engines were stopped, and a boat lowered in almost no time. But as resolute in death as sensitive in life—(here the whole fok's'le listened in deep silence)—we saw him as he floated away in the steamer's wake, deliberate raise his arms out of the water, stretch them to their full extent, and with closed eyes, but never a sound, go down like a shot, and——" but here the yarn was interrupted by the Bo'sns deep voice, "*Man overboard!*" As the men, headed by Rufe Underwood, rushed on deck, they heard the Captain's order clear, loud, and decisive, and his orders were promptly obeyed. The *Ocean Wave* was running before the wind:—

"Heave a life-buoy over!"

"Brace up the fore-yard!"

"Down with helm!"

"Weather mainbrace!"

Excellently done. The latter order of course backed the main topsail, and the ship came to the wind. A boat was soon lowered, and, when it reached the man, who should he be, safe and floating in the life-buoy, but that disparager of rescuing apparatus,—*Joe Harbidge!* I don't think to this day he forgets the comical faces of the boat's crew as they pulled him in, or the unmerciful badinage he received.

I remember that when the "funny man," Saul Diggs, had helped to make fast the boat—hooking on fore and after tackle, steady taut, and securing her to the skids—and when the helm was again put up, and we heard the Captain's orders, "Fill on her! keep her a-course!"—that veritable Saul (not of Tarsus, but Tiverton), said, "Well! it just proves my words and his, too! 'A life-buoy is no good,'—*it's saved Joe Harbidge!*"

"And what became of Mirror?" enquired Bob Harris, rubbing his bald eyebrow.

"Why," said Jack Berney, "she seemed past all consolation—for a time! I went to sea the next Autumn; and when I was again in her town I found the business disposed of. Mirror had run away with the young squire, and everybody said that he'd married her privately; all I know is, he didn't do it publicly."

"Them fem'nin'-gem'nin's is wery Indyrubberish," said Diggs; "more you knocks 'em down, higher they bounces!"

"Wimmin is Davy's darnin'-needles!" quoth Zachariah Burge; "they's punkin' sarse to a poor nigger an' pickles artewards, I bet!"

CAST-IRON VERSUS COPPER.

(Continued from our October Number.)

We have, since writing the former part of this article, obtained a report of the careful examination of a cast-iron steam pipe, that has been in use for three years. The report furnished us is "that it formed the centre piece of a superheater, placed in an uptake, and exposed to all that there may be of flame in the products of combustion at the lum-leg. It has been removed in consequence of the recent orders of the Board of Trade. The inner surface of the pipe is a light yellowish rust colour, but there is no body of rust on it. The outer surface is a dark reddish brown rust colour, but the skin of the metal is as sound as when it came out of the foundry. There is not the slightest sign of deterioration perceptible. Tried by the chisel, the metal is perfect at both surfaces. Breaking pieces off it shows that its three years baking has closed the grain of the metal, and that where the heat has been greatest, the crystals in its texture are finest, and the metal can be set up with the hammer, showing it to be now possessed of considerable ductility. The opinion of practical foremen is that the metal of this pipe has been improved by its three years' service." We look on this, however, as an exceptional case; but it goes to show that where surrounded with smoke, as in an uptake, unless exposed to the damp from rain entering by the funnel, when the boilers are out of use, there is almost no oxidation externally. The dryness of the atmosphere in which the pipe was located, and the absence of free oxygen in the gases accounts for this immunity in the case we have quoted.

We have in the preceding remarks written as on the side of cast-iron. But we do not assert that much cannot be said against cast-iron; nor do we mean that copper has not very much in its favour to recommend its use. In approaching the subject of the advantages of copper, we are met by the fact that its higher price offers on every occasion an inducement to keep the weight of copper below the requirements of strength. Cast-iron, on the other hand, is so moderate in cost, that there is seldom any scrimping in the thickness of the metal, and the moulder is always ready to rub the core to bring the thickness up to his standard, generally on the safe side.

In our foregoing comparison of the mechanical properties of the three metals—wrought-iron, cast-iron, and copper, we have taken equal sections of each; but as a matter of fact, cast-iron steam pipes are always made of at least four times the section of copper pipes that would be used for a like purpose. The margin of cohesive strength in the cast-iron pipes is, therefore, enormous; and while to test boiler-work to double the working pressure is considered an ample proof: cast-iron pipes may, with great propriety, be tested to five times the working pressure, before any work is put upon them. This high test refers to the pipes taken singly, and not to the combined structure, which should not be tested beyond double pressure.

The testing of cast-iron pipes is much more satisfactory than the testing of wrought-iron work. The limit of elasticity of the latter is, as we have shown above, at not more than one-third of its ultimate strength. Wrought-iron, therefore, cannot, without risk of injury, be tested to much above one-fourth of its breaking strain, for the limit of elasticity should not be passed; but as the limit of elasticity of cast-iron is above 80 per cent. of the ultimate cohesive strength, the hydraulic test can be carried very nearly to the full factor of safety required for wrought-iron boilers. This will, of course, be the case in all materials in which the limit of elasticity approximates towards the breaking strain.

We learn that Millar's cast-iron boiler now coming into use in the Cleveland district, where they ought to know what cast-iron is, is tested to 500 lbs. per square inch pressure on every pipe before any work is put upon it. The working pressure is 90 lbs. per square inch, and the safety valves are loaded for 120 lbs.

We would urge that where cast-iron pipes are used they should be tested, in the presence of a Board of Trade surveyor, to five times their working pressure while they are in the manufacturer's yard, and before they are put into the ship. It would be less expensive to the owners, and would satisfy the surveyors as to safety. It is necessary that such precautions will be taken as will preclude the possibility of faulty pipes being admitted.

The state of the case between copper and cast-iron, appears to be this—viz., for ordinary tear and wear in a rigid structure, the cast-iron is far superior: but for extraordinary circumstances, cases of violent collision, shifting of boilers in a sea way, and the like, copper is, undoubtedly, the safer material. But it may be said that Board of Trade surveyors should satisfy themselves that the boilers will not shift; and they are not required to certify that a vessel is collision-proof. Their declaration states simply that the hull and the machinery are sufficient for the service intended and in good condition; collision is *not* the service intended. The vessel has, however, to come alongside quays, and during the service

intended, and as a reasonable, and ordinary, and every day part of it, she may be bumped against the quay walls, and for this service she should be sufficient. Cast-iron pipes should, if they are used anywhere certainly not be used as rigid connections on the side of a ship where the side is exposed to be bumped on a dock wall. A copper pipe exposed to such strains will become distorted, and bend or buckle before it breaks, and is, therefore, less liable to fracture, and its fracture does not come wholly without warning.

Steamers have to cross bars at the mouths of rivers ; they often cross a bar when there is but little water to spare, and are then exposed, if there is any swell on, to be bumped on the bar. Cast-iron blow-off pipes in the bottom of a vessel, or any rigid range of cast-iron pipes, would then be liable to fracture. Cast-iron pipes so placed would not be sufficient for such a service, and are, therefore, properly objected to.

Cast-iron cannot resist the chemical action of hot brine. To act as brine pipes is a service for which cast-iron is, therefore, not sufficient, and to which it should not be applied. But here we come in contact with another feature in Board of Trade surveys. The declaration given by the surveyor is to the effect that the machinery will, in his judgment, be sufficient for the next twelve months. Now, although hot brine will, by chemical action, destroy cast-iron in the course of time, and sometimes very rapidly, a surveyor cannot say that he has any doubt that a new blow-off valve seat of cast-iron will not be sufficient for twelve months ; and he would not, therefore, be justified in objecting to it. In the course of twelve months when it is found to be suffering deterioration, the surveyor must object to it, and the owner will very likely tell him it has been passed by him or by some other surveyor before, and ask with true regret and injured innocence why that was not pointed out before the vessel was taken over from the manufacturer. But the question is one between the builder and the owner ; and the surveyor who, in the interest of an owner, directs his attention to such a thing, as likely to bring him into expenses on further surveys, is stepping out of his province, and the manufacturer if it came to his knowledge, might, under certain circumstances be inclined to treat it as an interference. If an owner chooses to put in a cast-iron pipe for hot brine he can do it, and it may possibly be passed while it is new ; but it is his fault, and not the surveyor's fault, that it must come out afterwards. The surveyor is not required by law to act as superintending engineer for either party. The probable sources of future deterioration which may come to his knowledge during a first survey, may very properly be described in his report to his colleagues and to his Board ; but ought that knowledge to be communicated to the owner of the vessel to the prejudice of the builder, or to the builder to the prejudice of the owner ? An owner

can fortify his position by availing himself of the services of a professional man to superintend the building of his vessel and its equipment, and to see that they are in accordance with existing regulations.

The conclusions at which we arrive are, that there are certain cases in which cast-iron ought not to be passed by surveyors in connection with marine boilers, etc.—viz., where it is subject to the direct impact of flame; where it is placed on the skin of a ship in such a position as to receive blows from stranding, or from striking against walls and piers; where it is used for the passage of hot brine; and where the steam pipes form a rigid connexion. Let owners and builders mutually agree to exclude cast-iron in the cases we have just mentioned, and if they use cast-iron in steam pipes, to provide them with yielding joints, and we think there will probably be an end of the controversy.

BOOKS RECEIVED

“Streffleur's Österreichische Militärische Zeitschrift.” Wien, 1872.

“HAMBURG'S Handel und Schifffahrt.” 1871.

“A new Elementary Course on plain Geometry.” By R. Wormell, M.A., B.Sc., &c., &c. London: Thos. Murby, 92, Bouverie Street, Fleet Street, E.C. We cannot too strongly recommend this book. The elements of euclid, of course, furnish the groundwork, but the author expresses the propositions more intelligibly and more concisely. The author appears to have none of that fear which has so long forbidden moderns to attack the original text of euclid. Those of our readers who are engaged either in teaching or in learning, will find this book of the greatest value.

“Victorian Patent Publications. Abstracts of Specifications of Patents 1854 to 1866. Metals. Part I.” By William Henry Archer, Registrar-General of Victoria. Melbourne, 1872. This can be inspected by our subscribers at the office of the *Nautical Magazine*.

“Meteorological Office. Quarterly Weather Report.” January to March, 1871. Stanford, Charing Cross, and Mitchell, 52, Parliament Street. This report is compiled and arranged with the utmost care and judgment. Of the eighteen pages of engravings appended, we must say that their usefulness and accuracy are only equalled by their execution.

“Magnetism and Deviation of the Compass.” By John Merrifield, LL.D., F.R.A.S., &c., &c. Longmans. A valuable pocket book. It contains in a small compass much that is useful. It is of more real use to applicants for examination than many large books on the same subject.

“Thirty-third Report of the Calcutta Sailors' Home.” The accounts are printed at length, and the report is short and to the point. The Home is well managed, and the work cheaply done, and the directors will not object if our readers send them a donation.

“The Areas of Safety Valves.” By Mr. James Howden. A Paper read before the Institution of Engineers and Shipbuilders in Scotland. We have criticised this at length in an article in the body of this month's *Nautical*.

“History of the Indemnification of German Private Property at Sea out of the French War Indemnity.” Published by the “Deutscher Nautischer Verein,” for circulation in England. London: Trübner and Co. Well worth perusal by those interested in law reforms.

“Geography and Investigation of the Polar Regions.” Nos. 68 and 69. (From Petermann's “Geographical Communications,” 1872. Part 10.) This interesting publication consists of two Papers. No. 68 gives a full account of the discoveries by Norwegian navigators in the Siberian Sea, and along the coasts of Nova Zembla, in the years 1869, 1870, and 1871, and concludes with a summary which cannot fail to give great encouragement to our Arctic explorers, and to inspire us with a hope that their efforts may at last be crowned with success. No. 69 is a Report of the late Norwegian survey of the N.E. part of Nova Zembla. By Mark, Donna, and Carlsen, in 1871. The value of the publication is further enhanced by two carefully executed maps of Nova Zembla and the adjoining seas.

CAPE OF GOOD HOPE.—The Queen has been pleased to appoint Jan Christoffel Berrangé Serrurier, Esq., to be Registrar or Prothonotary and Keeper of Records of the Supreme Court of the Colony of the Cape of Good Hope.

INSTRUCTIONS TO CONSULS.—WAGES AND EFFECTS OF DECEASED MERCHANT SEAMEN.—The British Government have agreed with the Governments of France, Denmark, Sweden and Norway, and the North German Confederation, to deliver to their respective Consuls General in London the wages and effects received by the Board of Trade under the provisions of the Merchant Shipping Act, 1854, of seamen belonging to those countries who have died on board British merchant vessels, and these Governments have on their part agreed to deliver to the nearest British Consul the property of British seamen dying on board their merchant vessels, or on shore in their territories. Her Majesty's Consuls have been requested to report to the Board of Trade the particulars of the deaths of such British seamen, and to receive their wages and effects, and to account for such wages and effects to the Board of Trade in the ordinary manner. The arrangement is about to be extended to Russia.

N I G H T.

WE have received the following verses from a sea-going engineer under the initials of "D. M." It is pleasing to receive such contributions from our brethren of the stoke-hole :—

There is a charm in quiet hours of night,
 To stray mid shady wood or silent grove.
 There is a spell in the moon's silvery light,
 Dear to the soul, and sacred unto love.
 Then thought exulting and delighted flies
 On happy wing to bring the distant near,
 To hold its sweet communion with the skies,
 Or revel in its native atmosphere.

How keen a thrill runs trembling through the soul
 As, wandering 'mid high Heaven's immensity,
 It rapturous treads where mighty planets roll
 And pleasures on thy shores, Infinity !
 Strange that the puny child of this dark earth,
 So impotent and yet so full of might,
 Should feel such transports of celestial birth
 In gazing on the everlasting light.

Arise my spirit, see yon bright abode
 Of clustered glories : spread th' exulting wing :
 Soar to thy home, the threshold of thy God,
 Creation's source, Being's eternal spring.
 There mayest thou find that high exalted shrine
 Where spirits gather in delighted throng ;
 Drink ! drink ! my soul their nectar draught divine,
 And join the raptures of the seraph song.

Immortal spirit, this frail house of clay—
 Oft trembling 'neath the gnawing touch of pain
 And with the germinations of decay,—
 Is *not* the seat of thy eternal reign ;
 No, thou shalt live when this frail frame is cold,
 A wreck fast blending with its parent clay,
 Thou wilt be young when e'en the earth is old
 And outworn crumbling planets pass away.

CORRESPONDENCE.

TONNAY-CHARENTE.—ABOLITION OF PASSES.

To the Editor of the Nautical Magazine.

SIR,—The paragraph headed “Tonny-Charente,” in the *Nautical Magazine* for this month,* in implying that all vessels bound to Charente can pass Rochefort Dockyard without any formality whatever, might mislead shipmasters, strangers to this port. I pray you, therefore, to allow me to state the facts.

Until lately, British vessels proceeding to, or leaving this port, having necessarily to cross the Rochefort Dockyard, were required to obtain licenses, or “passes,” to enable them to go through the dockyard, either way. These were procured by Rochefort shipbrokers, and involved an agency charge.

These “passes” have been now done away with, and their discontinuance is beneficial to British ships visiting Charente, in diminishing charges and delays, but certain formalities are still indispensable, among which I specify the following:—

1. Ships must not pass the Arsenal between gunfire, in the evening, and gunfire in the morning (sunset and sunrise).

2. Ships must not at any time pass the Arsenal, if warned by the hoisting of the prohibiting flag on the Tower of St. Louis.

3. Ships making stoppage in the Arsenal must have on board an agent of the Dockard authorities.

4. British ships, outward bound, must be provided with the Consular and Customs clearance certificates.

In regard to the first three requirements mentioned, French and British ships are on exact parity, but the Consul's certificate is, of course, inapplicable to French vessels.

It is proposed to publish the existing rules on the subjects referred to for the information of those concerned.

I have the honour to be, Sir,

Your obedient servant,

H. P. VEREKER.

21st September, 1872.

* *Nautical Magazine* for September, Vol. xli., No. IX., page 770.

DEMONSTRATION OF THE COMMON DEVIATION FORMULA.

$$\text{Deviation} = A + B s + C c + D S + C C,$$

where s is the sine, and c the cosine of the Course; also S is the sine, and C the cosine of twice the Course.

This Formula is confessedly only approximate; but it is admitted to be sufficiently correct for practical purposes, when the Deviation is small, or has been reduced to a moderate quantity by the usual methods of compensation. In it the sines of the several parts of the Deviation are reckoned as equal to the parts themselves; and the whole Deviation is assumed as equal to the sum of its parts, as found by separate Theorems.

Mr. Smith and Captain Evans, R.N., prove the Formula in their celebrated Manuals. But as they found the demonstration in Poisson's theory, many teachers have informed me that it is found to be difficult of comprehension to the generality of learners: I therefore submit the following attempt to found the reason of the Formula on common Trigonometrical Formulas, and the simplest principles of Magnetism.

1. $\sin 2 C = 2 \sin C. \cos C.$

2. $\cos 2 C = 2 \cos^2 C - 1$, or $= 1 - 2 \sin^2 C$;

and therefore $\cos^2 C = \frac{1}{2} (1 + \cos 2 C)$,

and $\sin^2 C = \frac{1}{2} (1 - \cos 2 C)$.

3. $\cos. (C + a) = \cos C. \cos a - \sin C. \sin a$;

where a is any constant arc, either $+$ or $-$; but attending to the Algebraical signs is of no consequence; because we are only investigating at present how C is involved.

4. The Deviation (assumed equal to its sine), produced by one magnet acting on another, varies as the sine of the angle contained between their directions. Now the ship may be considered as a huge magnet, the situation of its Poles depending on her position when building; but, wherever they are situated, the horizontal magnetic power of the ship is supposed to be resolved into two parts—viz., one in the direction of the middle fore and aft line, and the other at right angles to that line. The magnetism acquired in building is permanent, these parts, therefore, will retain the same absolute force in all positions of the ship; but their effects on the ship's compass will vary as the sines of the angles they form with the compass needle, or as $\sin C$ and $\cos C$ respectively (C being the Course).

But when one quantity varies as another, it is equal to that other multiplied by some constant.

Hence, we obtain the terms $B s$, and $C c$.

5. If magnetism be induced in a soft iron bar by a magnet, the force

induced is not permanent, but varies as the cosine of the angle contained between the magnet and the bar.

Now the soft iron in a ship may be considered as forming a huge bar. If the iron be symmetrically arranged, the horizontal induced magnetism in the bar will be in the direction of the fore and aft middle line of the ship, forming an angle with the compass needle equal to C ; therefore its force will vary as $\cos C$. But its effect will vary as $\sin C$ (by 4) therefore, when combined these will make the Deviation, arising from such a bar, vary as $\sin C. \cos C$ or as $\sin 2 C$ (by 1). This gives the term $D s$; the term $E C$ is nothing in this case.

If, however, the iron is not symmetrically arranged, then the soft iron must be represented by a bar inclined to the fore and aft line, at some constant angle with that line, which call a ; hence, $C + a$ will be the angle which it forms with the compass needle, and its force will vary as $\cos (C + a)$. This force is then supposed to be resolved into two forces, similarly to that of the ship's permanent magnetism, and therefore forming angles of C and $90^\circ - C$ with the magnetic needle. Consequently combining these, the two parts of the Deviation will be expressed by $\sin C. \cos (C + a)$ and $\cos C. \cos (C + a)$. These when developed (by 8) will give,

$$\sin C. \cos C. \cos a - \sin^2 C. \sin a,$$

$$\text{and } \cos^2 C \cos a - \sin C. \cos C. \sin a.$$

But $\sin C. \cos C$ can be expressed in terms of $\sin 2 C$ (by 1); and $\cos^2 C$ as also $\sin^2 C$ in terms of $\cos 2 C$ (by 2).

Hence, we have the terms $D S$ and $E C$.

As to the constant A , it is generally something like the index error of a sextant; but it is fully explained in all works on Deviation.

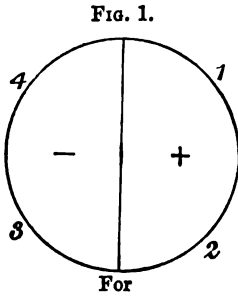
Having now attempted to accomplish the object I had in view in writing this paper, I may be allowed to remark that when a learner cannot clearly comprehend the fundamental part of a theory, he generally throws the whole aside, and only pays attention to the practical results.

If I have succeeded, in some degree, in making the Deviation formula intelligible to learners, so as to induce them to study the more advanced works on Deviation, I shall be satisfied.

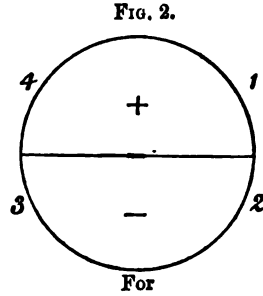
ALGEBRAICAL SIGNS OF THE SEVERAL TERMS OF THE DEVIATION FORMULA.

The Co-efficients, $A, B, C, \&c.$, are named E or W , as the case may be. But taking any particular part of the Deviation, say the term $B s$, the sign of this term is $+$ or $-$, according as s is $+$ or $-$: if it is $+$, the term will be of same name as B ; but of an opposite name, if s is $-$. Hence it is necessary to ascertain the Algebraical signs of $s, c, \&c.$, for the several Quadrants and Octants.

In my "Marine Board Catechism," Part II., p. 25, I have given eight Formulas, embracing all the changes of the Signs: that is for the eight Octants. But the following is a very simple method to enable a learner to fix the signs for any particular Octant.



For
B to a Quadrant Course,
and D to an Octant Course.



For
C to a Quadrant Course,
and E to an Octant Course.

1. On the Compass Card, number the Quadrants, 1, 2, 3 and 4, commencing at N, and reckoning towards the right.

2. Number the Octants (on east side) also 1, 2, 3, 4, from N to S; and on west side from S to N.

3. Notice what Quadrant any given Course is in, also notice in what Octant it is; then the above Figures will give the Algebraical signs; using the numbers 1, 2, 3, 4, whether the course be expressed as a Quadrant, or an Octant.

Or we may express the Rule thus:—If the Course is numbered 1 or 2, then B as also D is +. If the Course is 3 or 4, then C as also E is +. Otherwise the sign is -.

NOTE.—The learner need not be puzzled in using the No. of a Quadrant for an Octant, when he reflects that the Courses selected as in Octants have to be doubled.

EXAMPLE.

Required the Formula for Deviation corresponding to W.S.W. or S. 6 W.

This Course is in Quadrant 3, and Octant 2. Hence, by Fig. 1, B is -, and D is +. And by Fig. 2, C is -, and E is -.

$$\begin{aligned} \text{Therefore, Deviation for W.S.W.} &= A - B_{s_6} - C_{c_6} + D_{s_{12}} - E_{s_{12}} \\ &= A - B_{s_6} - C_{c_6} + D_{s_{11}} - E_{s_4} \end{aligned}$$

SIMPLIFICATION OF MR. TOWSON'S RULES FOR THE TIME AZIMUTH PROBLEM.

I wrote a paper under the above title, which appeared in the September number of the *Nautical Magazine*: I now beg to make some improvements.

In Rule 1, there is no occasion for using the phrase, "when one and only one": it may be simplified by saying "when either"; because only one can be greater than 90° in any case.

In Rule 4 say "when Arc I is less than the Latitude."

My Rules 3 and 4 may be changed thus:—Make the Azimuth of same name as the Declination, and also less than 90° , excepting when Arc I is less than the latitude: in which case take it from 180° .

I hope that my suggestions will be beneficial to Mr. Towson's excellent Tables.

JAMES GORDON.

Morden College, Blackheath,
S.E., London, 14th Oct., 1872.

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

(Continued from our September Number.)

At daybreak, on Wednesday the 28th, we saw the islands which lie off Double Point to leeward of us, and much closer than the land on the previous morning. Coyle, Phillips and I began to repair as well as we could, after which we made some more paddles, as of course we lost them all during the night. It was rather a difficult operation, as Bardon had dropped the axe overboard the day before, and we had nothing left in the shape of tools but a marlinspike, which was twisted up in some rope. With this and one of Coyle's boots we managed to split up part of one of the hatches. We then set to work paddling as before, and kept at it throughout the day. We were unable to make the islands, the current carrying us right past them. The wind and sea moderated greatly during the day, so that we were rather more comfortable than before. The raft discontinued its revolutions, and nothing of any importance occurred during the day. We continued drifting along the shore at a distance of about two miles. Night came on, and the moon rose, and the raft turned over for the last time about an hour or so before we reached land. On this occasion we had to assist some of our comrades on board, as they were quite helpless; in fact, Ingham had been out of his mind the whole of the day, and we with great difficulty prevented him from lying down in the water, and others were rapidly losing their senses. About midnight we saw that we were getting very close to shore, and drifting straight on to a white sandy beach; there was no doubt

about it this time. I gave a loud shout, and tried to rouse them from their lethargy ; it seemed to have little effect, most of them not appearing to hear me. As we got into shallow water, we were struck two or three times very heavily by the breakers, and shortly afterwards grounded on the beach. I tried to get Ingham to rouse himself, but could not, so took him in my arms and rolled with him into the water. It cost me much trouble to drag him out of the surf. I had to get him along by inches, holding his head above water when the rollers came in, and pulling him along the sand when they receded. In the meantime, a somewhat similar scene was taking place on the other side of the raft, for Smith, being very little able to help himself, was being assisted by Coyle in the same way. The others, though some were very weak, managed to get ashore themselves. We then dragged Ingham and Smith up above high water mark, and disposed ourselves to sleep under the shelter of some bushes.

CHAPTER IV.

I awoke at daylight the next morning, and started off into the bush to look for food. It had rained several times during the night, so that there was no lack of water ; but strange to say I did not feel either hungry or thirsty, although we had been three days and nights without food or drink, in fact there were only a few of our number who had felt any thirst ; this, I suppose, was attributable to our having been immersed in water the whole time. I, however, discovered that I was much weaker than I thought, and also that my feet and legs were covered with cuts and very much chafed ; this would not have interfered with my movements to any great extent, had there not been two cuts on the sole of my left foot, which were rather painful. I wandered about in the bush the greater part of the day, but could find nothing eatable except a small slug, which I devoured raw. On returning to where we had passed the night, I found Ingham alone. Shortly afterwards Phillips, Haydon, and Smith came up, bringing with them a fruit of the pandanus or screw palm. This is an-oval shaped fruit, about the size of a large pineapple, and yellow when ripe ; a little sweetish juice may be obtained by chewing the seed cases. They told me that Coyle had gone away with two blacks, and that they were unable to keep up. Coyle, however, afterwards informed me that he asked Haydon and Phillips to accompany him when going towards the blacks, and they refused. We passed another night in the same place as the first, making a shelter of boughs, as the weather still looked rainy.

The next day we started along the beach southward, and about mid-day saw Coyle coming back, accompanied by some blacks. The latter stopped at some distance from us, and Coyle came on alone. He told us he had passed a very comfortable night at their camp, and had been

fed by them. He gave us one or two fruit that he had picked up under a tree near the camp. These were about the size of a small apple, oblong in shape, and perfectly white; they are, I believe, the fruit of a kind of myrtle. Coyle now proposed that we should all go back with them. This we at once agreed to, but the blacks, on seeing us coming, started off, and we could not overtake them. Coyle and Phillips, however, followed them, and stayed away another night, the rest of us being either too weak or lame to walk so far. I forgot to mention that Bardon and Siddell had left us on the morning after landing, without our knowledge, and we saw nothing of them for eight days. We considered that this was not quite right, but were not much surprised at such behaviour from them, especially Siddell, as he had shown himself both selfish and lazy while on the raft, and never would do a stroke of work, or make himself useful in any way, unless he was absolutely compelled.

I saw this morning a few pigeons, they were a small kind, of a light brown colour. There were very few birds about here, black and white cockatoos being the most common. I also observed an osprey, of which the back and wings were a dark cinnamon colour.

But to return to my story. We slept that night in some deserted huts built by the blacks, and were more comfortable than we had hitherto been, as we had a waterproof covering for our heads. These huts or gunyahs, are oval in shape, and built of long pliable twigs, which are stuck in the ground, and tied so as to form a succession of arches. This framework is then thatched with palm leaves and tea tree bark, with one, two, and sometimes three entrances, according to the size.

Coyle and Phillips returned next morning, bringing with them a few more of the white fruit. When eating them, they told us that on reaching the camp they found it deserted. They, however, slept there, and in the morning hearing blacks cooeing, they looked out and saw several of them at a distance with arms in their hands; they therefore judged it better to decamp.

After some deliberation, we decided on turning our steps southward, and trying to reach Cardwell, for we imagined, and rightly, as we afterwards found, that we were north of that township. We started then along the beach, and made a short stage the first day. As the sun was already high, and Ingham and Smith complained of fatigue, we slept in another deserted hut, of which there were many along the shore, and next morning made an early start. After a mile or so we came to a rocky point, which took us some time to get round in our disabled condition; again long stretches of sandy beach, and then we came to the remains of a fire. We searched about, thinking that perchance the blacks had left something eatable. Coyle picked up what was apparently the stem of some bulbous or araceous plant and bit it. He instantly

dropped it, and gasped out "water." Picking up a large shell we were carrying for drinking purposes, I hobbled off to a small creek, which was fortunately at no great distance, and got some. He met me as I was hurrying back, and began to rinse his mouth. For the space of nearly an hour he sat by the creek and continued rinsing his mouth, the foam running from his lips. We sent the weakest of the party forward in order to lose no time, while Phillips and I waited till Coyle was ready to accompany us. He described the sensation as a most intense burning. He was apparently in great agony, and could not speak without difficulty for the remainder of the day. Soon after this we came to the shore of a pretty little bay, which we found to be the mouth of a large river, subsequently named Gladys river by Captain Moresby of the *Basilisk*. On the shores of this bay we picked up some small red fruit, about the size of a cherry. This I believe to be a species of *Eugenia*. It bears the fruit on the stem. These I thought harmless on tasting them, so we collected as many as we could find. At the head of this bay we discovered a tree bearing fruit, also red, but smaller than the last mentioned. It had a pleasant acid flavour, and inside a hard flat stone, resembling a plumstone in shape. We ate a few of these, and took some with us. Further on we picked up a few nuts which are known as the "Queensland nut." These are pleasant to the taste, and grow with a green husk, not unlike a walnut, but the shell is exceedingly hard. We still kept on our way, and had now reached the river. We agreed to make our way along the bank, to see if it was possible to cross higher up, so went on through dense mangrove swamps, until we were brought to a halt by a large tributary. It was getting late. We therefore left the swampy ground, and turned into the bush, where we fortunately found another deserted camp, in which we slept.

There were numbers of mosquitoes here, as might have been expected, in the vicinity of these swamps. Indeed, it rather surprised me that we had seen none before. There were, however, numbers of March flies on the coast, but a different variety from that in the neighbourhood of Sydney. One kind of Mangrove here, bears fruit as large as a shaddock, filled with seeds, each enclosed in a hard pulp.

Before it grew dark, Haydon read a chapter from his Bible, which he had managed to save (I lost everything out of my pockets but two knives), and from this time one or other of us read a chapter or two every morning and evening. We rose at daybreak, after a good night's rest, had a breakfast of the few fruit we had brought with us, and agreed that as we could not cross the river, we would go back to the coast and try and live there till found by some vessel, feeling sure that we would never be given up until a thorough search had been made. We had not gone far when we heard some blacks cooey. Coyle and I who were in front,

pushed forward through the bushes, and saw two men and a boy a little way from us. We beckoned and made signs to them for food. They understood us apparently, and motioned us to follow them. We did so till we came to a small tributary of the river. Over this they ferried us on a raft made of Banana stems, and then led us on till we met two other blacks, and handing us over to them, returned to where we had found them. Our new friends had fishing lines in their hands, plainly showing on what errand they were bent. They started with us in the same direction we were ourselves travelling, and after going a few miles came to their fishing ground. They first caught a few shrimps for bait. They then walked out into the sea up to their waists and began their work. When the tide rose too high they desisted, having caught about a dozen fish, some of them nearly a foot in length; there were two kinds—one a species of bream.

They gave us about half a fish each, and I think we enjoyed it more than anything we had ever tasted; at least, I can speak for myself. Our meal concluded, our dark friends got up to go away, and Coyle and I prepared to follow them. We asked the others to come as it was our best chance of getting food, but they declared they could go no further that day, so we started without them. Our new friends' names were Newyunggor and Weimah. We tried to get them to repeat ours, but they made a very poor attempt at it. Weimah started on considerably in advance of us, and Newyunggor, who was an old man and rather ugly, stayed and escorted us. We did not care much about his bad looks, however, as we knew he had some cooked fish stowed away in his basket, and we kept on worrying the old chap till he "forked out;" he evidently did not intend to lose by his good nature though, for he immediately began gobbling it down as fast as he could, handing us small pieces at a time. However, we did not let him alone till his basket was empty. These baskets are made of split cane, and are very prettily and symmetrically formed; they have large funnel-shaped ones five or six feet long, made of the same material, for the purpose of catching shrimps. These look like immense extinguishers. We went on, after devouring all the old fellow's fish, till we reached the camp, where there were several gins and piccaninies. They made us a fire at a little distance from their own, and we slept soundly till morning. Mr. Weimah, however, thought fit to relieve me of my coat, for, under a pretext of arranging Coyle's as a pillow for both, quietly walked off with mine. I did not miss it till daylight, so dexterously had he managed it. In the morning I vehemently accused him of stealing it, but he would not understand me. However, I forgave him his misdeeds, for he brought us, soon after day-break, a parcel of shrimps nicely cooked. We ate some and kept the rest for our companions. While enjoying our breakfast, the blacks started

away unnoticed by us, until they had gone a considerable distance. We went after them, but came to a halt when we reached their fire, for we observed that it was heaped up. Consequently there must be something cooking. We scraped away the ashes and unearthed several large parcels made of palm leaves. On opening one we found it full of shrimps. We tied it up again, and, carefully covering them all, sat down at a little distance to await their return. The blacks came back in the afternoon, and we immediately began the same game we had practised so successfully the evening before with old Newyunggor. They gave us a parcel of the shrimps, larger than the previous one. After eating a few, Coyle started with the remainder to our mates, while I stayed with the blacks to superintend their movements, as we did not mean to lose sight of them any more.

They started soon after to the same fishing ground as before, and I went with them; the other four and Coyle were there waiting for us. The fishermen were not so successful as on the previous day. However, they caught a few, and making a fire by rubbing together two sticks, they proceeded to cook them. This time they only gave us two small bream, which had to be divided among six, so that we had rather a scanty dinner. However, Haydon and Phillips had been back as far as the bay for some more of the red berries. They had brought back a few and also some white fruit.

While we were dining, the two blacks had quietly stolen away without giving us any warning, evidently intending to give us the slip, but Coyle and I started after them, although they were a good distance away. When we came near where they were camping, we saw a large party of blacks sitting round their fire. One of them came forward. He proved to be one of those whom Coyle had first met. As usual, we immediately began making signs for food; he motioned us to follow him, and he led us to where he had before taken Coyle, a little south of Cooper's Point. We found them camping in the open air, at some distance from their huts. There were fifteen or twenty in this lot, including children; they appeared glad to see us, and welcomed us heartily, inviting us to sit down and partake of their supper, which consisted of a moist whitish substance, made from the Moreton Bay chestnut. This bean, in its natural state, contains a strong purgative, as with other Leguminosæ; this they extract by baking, and soaking in water, after which it is sliced very fine with a shell, and again soaked; it is very tasteless stuff. There are also several nuts and roots which require to be prepared in a similar manner, and are all equally tasteless. We slept soundly, notwithstanding that one or two of the blacks were singing a dreary monotonous song the greater part of the night.

These blacks are a very diminutive race of men, and it is little to be

wondered at, considering what they live on; very few of them attain the height of five feet six, and their limbs are extremely slight. Their weapons, also, are very poor; their spears are made of light wood, tipped with hard wood, and roughly pointed; in some there is as much or more hard wood than light; they point them by charring them in the fire, and then scraping them with a shell. Their most formidable weapon, though a very unwieldy one, is a kind of wooden sword; this is generally from five to six feet long, and about five inches broad, with a small handle, about three inches in length. Their shields are about three feet long, and ten inches or a foot in breadth. There was a very old man in this camp, with white hair and beard.

(To be continued.)

INSTRUCTIONS FOR SAVING DROWNING PERSONS BY SWIMMING TO THEIR RELIEF.

We have often been asked for instructions under this head. We cannot do better than reproduce the following from the "Life Boat," the journal of the Royal National Life Boat Institution.

1st. When you approach a person drowning in the water, assure him, with a loud and firm voice, that he is safe.

2nd. Before jumping in to save him, divest yourself as far and as quickly as possible of all clothes; tear them off if necessary, but if there is not time, loose, at all events, the foot of your drawers if they are tied, as, if you do not do so, they fill with water, and drag you.

3rd. On swimming to a person in the sea, if he be struggling, do not seize him then, but keep off for a few seconds till he gets quiet, which will be after he gets a mouthful or two; for it is sheer madness to take hold of a man when he is struggling in the water, and if you do, you run a great risk.

4th. Then get close to him and take fast hold of the hair of his head, turn him as quickly as possible on to his back, give him a sudden pull and this will cause him to float, then throw yourself on your back also and swim for the shore, both hands having hold of his hair, you on your back and he also on his, and, of course, his back to your stomach. In this way you will get sooner and safer on shore than by any other means, and you can easily thus swim with two or three persons; the writer has often, as an experiment, done it with four, and gone with them forty or fifty yards into the sea. One great advantage of this method is that it enables you to keep your head up, and also to hold the person's head up

you are trying to save. It is of primary importance that you take fast hold of the hair, and throw both the person and yourself on your backs. After many experiments I find this vastly preferable to all other methods. You can, in this manner, float nearly as long as you please, or until a boat or other help can be obtained.

5th. I believe there is no such thing as a death-grasp, at least it must be unusual, for I have seen many persons drowned and have never witnessed it. As soon as a drowning man begins to get feeble and to lose his recollection, he gradually slackens his hold until he quits altogether. No apprehension need, therefore, be felt on that head when attempting to rescue a drowning person.

6th. After a person has sunk to the bottom, if the water be smooth, the exact position where the body lies may be known by the air-bubbles which will occasionally rise to the surface, allowance being of course made for the motion of the water, if in a tideway or stream, which will have carried the bubbles out of a perpendicular course in rising to the surface. A body may be often regained from the bottom before too late for recovery, by diving for it in the direction indicated by these bubbles.

7th. On rescuing a person by diving to the bottom, the hair of the head should be seized by one hand only, and the other used in conjunction with the feet in raising yourself and the drowning person to the surface.

8th. If in the sea, it may sometimes be a great error to try to get to land. If there be a strong "outsetting" tide, and you are swimming either by yourself, or having hold of a person who cannot swim, then get on to your back and float till help comes. Many a man exhausts himself by stemming the billows for the shore on a back-going tide, and sinks in the effort, when, if he had floated, a boat or other aid might have been obtained.

9th. These instructions apply alike to all circumstances; whether the roughest sea or smooth water.

SHIPPING OFFICE AT PORT ADELAIDE.—We have received a communication from the President of the Marine Board, at Port Adelaide, South Australia, respecting an erroneous impression conveyed in certain statements in English newspapers, respecting the case of the *Columbus*, heard at the Mansion House. The man Macfarlane, who was stated to have been a deserter from that ship, was not a deserter, for the President sends us evidence to prove that he was arrested on a charge of theft. We are glad to take this opportunity of bearing witness to the very effective manner in which the shipping and discharge of crews is conducted at Port Adelaide. If the business were done as well at all other places, there would be fewer desertions from British ships.

GENERAL.

ROYAL NAVAL RESERVE.—The number of seamen who have applied to be enrolled is 33,957, of whom 28,979 have been actually enrolled. Out of the number enrolled, 2,747 have been discharged, 3,098 have died, 643 have joined the Royal Navy, and 10,624 have, on completing a period of five years, not applied to be re-enrolled. The present strength of the Reserve is 11,867, of whom 11,618 have undergone their drill. The total number of enrolments in the second-class Reserve is 17, and there is but little possibility and no probability of the number increasing until the revised regulations are issued. As regards Mr. Goschen's Royal Naval Artillery Volunteers to be enrolled for the defence of the ports, we are unable to say anything, for although many newspapers have given an outline of the regulations and conditions on which those volunteers are to be enrolled and to serve, we cannot find that anything has really been settled.

THE SOUTH PACIFIC.—HYDROGRAPHIC INFORMATION.—INCORRECT CHARTS.—I have recently been on a trip to the Navigator's Islands. In the course of this trip I was very much struck with the small amount of information that appeared to be accessible respecting the countless islands of the Pacific, and also respecting the winds and currents in that ocean, and it occurred to me that this want of definite and reliable information respecting a part of the world that is destined at no distant date to attain great commercial importance, might be supplied if the men-of-war visiting these seas were instructed to make observations on the currents, winds, &c., during their cruises. The British Government have several vessels of war constantly visiting the South Sea Islands. The American, French, Prussian, and Russian Governments have also each one or more cruisers in these waters, yet so far as I have heard, unless the vessels are fitted out for some scientific object, very little information respecting the localities they visit is made public. All the incertitude that now exists respecting a large portion of the South Pacific Ocean might, I submit, soon give place to exact information, for the use of mariners, if the several Governments would arrange to map out for themselves, respectively, certain limits of latitude and longitude within which their vessels of war visiting the Pacific might execute surveys, and make observations of the winds and currents. The information thus procured might be brought together, and a valuable and reliable chart of the whole ocean might soon be constructed with little cost, and without materially interfering with the objects for which these vessels are sent out. If these views commend themselves to you, I am sure you will be able to initiate such representations in the proper quarters as will tend to their being at least ventilated. What drew my

attention to this matter most forcibly were some remarks made to me by the captain of the steamer, by which I went from here to the Navigators, respecting the number of shoals and dangers marked in the charts of the Pacific, which had no existence. He showed me a chart in which scores of shoal patches, coral reefs, and other dangers had been scored out, from information obtained at Honolulu, from the masters of whalers, which annually visit that place in great numbers, when they return from the Northern whale fishery. He also showed me some dangers marked on the map, which, from his own observation, he knew did not exist. I urged him to give me a report on this subject, in such a shape that it could be turned to use in correcting the charts, and he promised to do so; but up to the present time, I have not received it; any particulars that I may receive from him I will at once forward to you, as you would no doubt consider them worthy of being inserted in your *Nautical Magazine*.—From our Correspondent at Wellington, New Zealand.

IMPORTANT NOTICE.—PRIZE SAFETY VALVES.—We have been led to believe that this competition is not so well known as it should be, and we have, therefore, again postponed the date down to which designs may be sent in to the 31st December, 1872. Intending competitors are referred to the notice at the end of this number, and to the paragraph announcement at page 757 of the number for September. The designs already received are as follows:—1. Cummins Cummins*; 2. C. Ax. Carlander; 3. Fleis endtet Freis; 4. Virgo*; 5. Alpha*; 6. Semper Vigilans*; 7. Molecular Vortex*; 8. A step in the right direction*; 9. Q. E. D.*; 10. Post Tenebras Lux*; 11. Magellan. Those marked with the star only have sent the entrance fee. None of the parcels yet sent have been opened. We have received a donation from Mr. James Caird, with an assurance of his hearty sympathy.

LIVES SAVED AND COST OF SAVING LIFE.—From the Board of Trade wreck return presented to Parliament, by command of Her Majesty, it appears that in sixteen years, ended 1871, 56,111 lives were saved by the following means:—

1. By ship's own boats	...	...	...	...	22,615
2. By ships and steamboats	...	...	...	...	13,874
3. By luggers, coast guard boats, and small craft	...				8,765
4. By rocket apparatus on the coast		...	...		5,287
5. By other means	...	...	...	...	5,570

56,111

The cost of saving these lives has been entirely borne by the Mercantile Marine Fund, and amounts to £90,832 0s. 10d. The number of lives saved by lifeboats during the same period was, according to the returns,

6,587, and for the saving of these lives that noble establishment, the Royal National Lifeboat Institution, collected and found the money; with the exception of donations, amounting to £42,267 10s. 11d., paid by the Board of Trade out of the Mercantile Marine Fund. Payment to the Institution by the Board of Trade ceased in 1868. It doubtless contributed much to the solidity of the Institution during the fourteen years that payment was made. The public will see, whatever may be said about the inefficiency of ship's boats and the parsimony of ship-owners, that in fourteen years 22,615 lives have been saved by ship's boats alone; and that the Mercantile Marine Fund, a shipowners fund, has contributed towards saving life at sea no less a sum than £133,099 11s. 9d.

COLLISIONS IN RIVERS.—The rule in our streets—viz., that vehicles going one way shall keep to one side, and vehicles going in the opposite direction shall keep to the other side of the midway, prevents hundreds of casualties daily; and yet there is no such general rule for steamers employed in navigating rivers and narrow channels. It thus happens that we have collisions like that in which the *Batavier* was sunk recently in the Thames, and it is in consequence of the absence of a rule that steamers should keep to the right of the mid-channel, or fairway, that the last wreck return (1871) shows 46 collisions as having happened in narrow channels, between two *steam* ships, both of which were under weigh. Other Parliamentary papers show, that the Registrar of the Admiralty Court, Lloyds' Salvage Association, the General Shipowners' Society, the Admiralty, the Trinity House, and the Board of Trade, are in favour of establishing such a rule; and, secondly, that the Thames Conservancy Board have not adopted it for the Thames.

STRIKES.—SPEECH OF THE RIGHT HON. ROBERT LOWE, M.P., AT GLASGOW.—First, I would say a word on a subject which is really of a painful and absorbing interest at the present time—that is, the subject of strikes. I do not propose to go into that large and difficult subject at this time—it is impossible to do so; but I wish to submit to you one observation on a particular kind of strike that I think has not yet been made. It is a very prevalent belief, I find, at this time at least, among people that I converse with, that strikes can permanently raise the price of manufactured commodities; and, further, that strikes so permanently raising them can be beneficial to the working classes. I wish to say two or three words on this subject, because I believe that neither of these propositions is capable of being maintained in argument. (Cheers.) You must remember that when there is a demand for any particular article or commodity, that demand is not for the article in the abstract, it is not an absolute demand for that article—it is a demand for that article at a particular price, and if it cannot be obtained at that price a very slight

rise will very often materially check and destroy the demand for the article. (Cheers.) Now, that is a thing which, it appears to me, is lost sight of in these speculations about strikes. If persons, by striking, only take away a certain portion of the profits of the manufacturer, and the article is not increased in price—I do not enter in the least into the question as to what effect that has—but supposing a strike to increase the price of the article, it is quite evident that just in the proportion as it increases that price it must diminish the demand for that article. (Hear, hear.) Foreign competition is brought in; substitutes for the article so increased in price are discovered—or if nothing of that kind can be done, people can no longer afford it, and they learn to do without it, and therefore there is considerable diminution in the demand for that article. How is that to be met? Clearly, less of the article must be manufactured, unless the business is to be become a ruinous one. But if less of it is manufactured, a considerable portion of the labour employed in that manufacture must be taken out of employ; so that the first step in such a strike is to turn adrift a number of labourers who before were earning their subsistence by that species of manufacture; and the second step is to give very exaggerated wages for the moment to those who still continue to work in that manufacture. Thus the effect is to sacrifice one part of the trade to the other. But the thing will never stop there. You will then have this state of things: You have an article whose price is artificially enhanced, and the demand for which is therefore diminished, and you have a number of persons receiving wages artificially forced up beyond the level of other wages. What must be the necessary effect of that? Why, every ingenuity will be exerted, everything that machinery can do, everything that bringing persons from a distance, or bringing goods from foreign countries can do, will be attempted to beat down that price. Not only so, but the high wages that have been extracted will be an irresistible temptation to other persons to flock to that trade; and in that way everything for which so much has been sacrificed and so much done, the high rate of wages received by those persons who still continue employed will infallibly be beaten down at least to the level at which it stood before the strike began, and very probably much below it. (Cheers.) What will then have been gained by this transaction? What is gained is, that you have given to a few persons for a short time an exaggerated rate of wages, while on the other hand you have turned a number of innocent persons out of employment; altogether you have disorganised a great branch of industry, and forced capital from one channel into another; and the loss is that after all this has been done, and all this sacrifice made for an object so totally inadequate, that that competition which it is impossible for you to exclude will beat down the price again to the original level from which it was raised. (Cheers.)

BIRD ISLANDS LIGHTHOUSE.—PORT ELIZABETH, Aug. 30.—The new lighthouse in course of erection at Bird Islands has been built to the height of 40 feet, but the works will shortly be at a standstill for want of ironwork ordered from England some time ago, but which has not been supplied in consequence of the strike among the workmen at home.

NEW PORT ON THE GULF OF FINLAND.—The *Messenger de Cronstadt* gives an account of the progress of the formation of the new port of Petrovsk, near Sestroresk. A branch line has been already completed from the Bielir Ostrof station of the Finland Railway to the new port. A railway direct to St. Petersburg is to be constructed along the coast.

A USEFUL LITTLE BOOK.—A recent publication on "Magnetism and Deviation of the Compass for the use of Students in Navigation and Science Schools," by John Merrifield, LL.D., F.R.A.S., we can confidently pronounce to be a valuable little work. Navigators who not only become possessed of it, but study well its contents, will be amply repaid by the increased confidence they will be enabled to place in their old friend, the mariner's compass. This little book cannot be too highly recommended.

OUR OFFICIAL LOG.

RETIREMENT AT LIVERPOOL.—Mr. James Martyr, who has for many years ably filled the post of shipwright surveyor to the Board of Trade at Liverpool, has retired on superannuation granted by the Board of Trade.

DOVER PIER.—The Board of Trade, with the concurrence of the Lords Commissioners of Her Majesty's Treasury, have given notice that the situation or employment of gateman at the Government Pier at Dover is added to Schedule B of the Order in Council of June 4, 1870.

IMPORTATION OF CATTLE INTO IRELAND.—The *Dublin Gazette* contains an Order in Council prohibiting the importation into Ireland of all kinds of cattle from Germany and Great Britain, and of sheep from Germany and England. Sheep from Scotland are also excluded, unless they are accompanied by a declaration that they are Scotch sheep, and have never been out of Scotland.

SAFETY VALVES.—The following copy of a letter has been sent to us:—"Board of Trade, Whitehall Gardens, 5th October, 1872.—Gentlemen, —In reply to your letter of the 25th ultimo, I am directed by the Board of Trade to acquaint you that they will not object to your fitting the boilers of the steamers to which you refer, with Taylor's Spring Safety Valve, by way of experiment and on the conditions named below. The conditions are: (1.) That there shall be two safety valves on each boiler ;

(2.) That the area of each valve shall not be less than one 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 ; (5.) That these valves shall also be cased in, in the usual manner of Government valves ; and (6.) That proper lifting gear shall be provided to ease all the valves, if necessary, when steam is up. I am to request that the Board may be informed of the names of the vessels which are to be fitted with the spring valve proposed by you. They would also be glad to be informed of the working of the valves in these cases.—I am, &c. (Signed) THOMAS GRAY.—To Messrs. John Elder and Co., 12, Centre Street, Glasgow.”

CARDIFF.—The Board of Trade have recently increased the staff at the shipping office here. The police staff has been much strengthened. Crimps, please note ! Mr. Turner, the active and courteous deputy superintendent, has been placed on a higher scale of salary, which he has fairly won by hard work. Mr. Neate has been appointed emigration surveyor and examiner of masters and mates ; and Mr. Henri, examiner of engineers. These two officers have also received a rise of pay. Mr. Neate is well known on our coasts as one of those officers who not only believes in the rocket apparatus, but has saved many lives by it ; and Mr. Henri sighted the guns at Lucknow, under Captain Peel ; Mr. Miller, the collector, under whose judicious management the Cardiff offices have progressed, may well now be proud of his staff ; and South Wales will not be slow to appreciate the fact that their Mercantile Marine Office, with its examiners and surveyors, and tonnage measurers, and emigration officers, is in as good a position as any port in the United Kingdom, and better than many.

LIVERPOOL.—MEDICAL OFFICER.—The Board of Trade are about to appoint a third medical officer to inspect emigrants at Liverpool. See our advertising columns.

ADVANCE NOTES.—GLASGOW AND GREENOCK.—The Board of Trade have decided that these notes shall no longer be sold and filled up at the Mercantile Marine Offices of Glasgow and Greenock.

MARITIME LAW.

ASSAULT ON A CAPTAIN.—A master mariner, who was seriously assaulted by a sailor runner, named Michael Morgan, for offering to rescue a seaman from the clutches of a number of boarding-house keepers, runners &c., who were persuading him to go to their respective houses, instead of to the Sailors' Home, summoned his assailant for the assault. The Court considered that the master's conduct, in endeavouring to rescue a young sailor from the hands of harpies, and assisting

him to get to the Sailors' Home, where he knew he would not be imposed upon, seemed to have been dictated by motives of humanity and kindness, and fined Morgan 40s. and costs.—Liverpool Police Court, Sept. 17.

TAKING A PILOT OUT OF HIS DISTRICT.—John Terry, a master pilot, of Queenstown, summoned the captain of the barque *Australia*, under sec. 357 of the Merchant Shipping Act, for bringing him out of his district without his consent. It appeared that complainant was engaged at Queenstown to pilot the *Australia* out to sea, but the defendant, instead of allowing him to go ashore after his services were completed, cut his (complainant's) boat adrift, brought him to Liverpool, and had since refused to pay him for his services or allow him any compensation. The Court held that the conduct of the defendant was inexcusable, and made an order for payment of £10, the amount claimed, and costs.—Birkenhead Police Court, Sept. 19.

REFUSING TO JOIN SHIP.—Charles Dales, who had engaged as mate of the *Marshal*, of Burghhead, at £4 5s. per month for a voyage to the Baltic and back, but refused to go, was convicted and sentenced to thirty days imprisonment, ten days with hard labour, without the alternative of a fine.—Justice of the Peace Court, Fraserburgh.

CARDIFF POLICE COURT.—DESERTION.—On the 26th September last, John Hunter, *alias* Richard Wilson, and Hugh Darni, were charged with deserting from the *Malabar*, a British ship. It appears they shipped about the 7th September at London and Gravesend, and on arrival at the Penarth Dock, Cardiff, on the 18th, they deserted. They were arrested by the Mercantile Marine Office detective in a beerhouse in Bute Terrace. Captain Douglas prosecuted, and produced the agreement and ship's register. He proved the signatures of the men, and identified them as the members of his crew who had deserted. Their defence was a curious one—namely, that the ship was *overmanned*. They were each committed to Cardiff Gaol for three months with hard labour. It is to be hoped this example will prove a deterrent to others. It further transpired that Darni had shipped again, and that the other delinquent had engaged for no less than three vessels—namely, the *Marco Polo*, at London, the *Malabar*, at Gravesend, and the *Sea Gull*, at Cardiff, receiving in all advances to the amount of £8 10s., for which he had only served about two weeks in the *Malabar*. It is well known that at Cardiff and other coal loading ports, where vessels shift in ballast to load, desertion is systematic and extensive. The Assistant Secretary of the Board of Trade Marine Department has recently made an inspection of some of those ports, and caused arrangements to be made which may tend to its suppression. This, however, can never be effectually done unless masters and owners of ships will co-operate heartily in the work.

They ought, on arrival at these ports, to deposit agreements at the Mercantile Marine Office, and authorise prosecutions whenever desertion takes place. In this case it was only by Captain Douglass acting in this prompt manner that these men were stopped. It is well known that many ships are worked round to loading ports cheaply by giving a month's, or half a month's, advance to needy seamen, instead of employing "runners" at increased rates. This mode only encourages desertion by creating a species of justification for it; and in the interest of the general well-being of shipping ought to be avoided. With proper measures, there is no doubt it can be put down. The example of Cardiff in the matter of "neglecting to join" ships at sailing is a guarantee of this. Up to 1866 this offence was simply wholesale there. But in that year the Board of Trade placed a police staff at the Mercantile Marine Office, and the result has been beyond all expectation. In 1866, 1867, 1868, 1869, 1870, and 1871, the percentage loss of men who did not proceed to sea in British ships on foreign-going voyages, after signing agreements, was reduced respectively to 3·89, 2·71, 2·09, 2·19, 2·39, and 2·36.

COAL CONTRACT.—NEW FRENCH MERCHANT SHIPPING LAW.—In a contestation between Messrs. Corry Brothers, of Cardiff, an English coal company, and the Western of France Railway Company, it appeared that the Messrs. Corry, in June, 1869, engaged to supply the Western Railway with 60,000 tons of coal, subject to the stipulation that the contract might be cancelled in case of continental or maritime war, or any change in the English or French Navigation Laws. The Messrs. Corry fulfilled their contract during the Prussian war, but on the passing of the law of the 30th January last, which imposed an additional duty on importation in English vessels, they claimed exemption under their contract, and refused to deliver 10,212 tons still due. The Railway Company sued the Messrs. Corry on the following grounds—viz., 1. that they had no right to demand the cancelling of the contract, by proposing, subsequently to the date of the new law, to release themselves on payment of an indemnity. 2. That the law in question was a Customs' duty, and not a change in the Navigation Law. The Court gave judgment for the Messrs. Corry, declaring that if the defendants had, in consequence of the immense increase in the price of the coals, offered by letter to redeem the remainder of the contract, they, at the same time, reserved their rights under the terms of the contract; also, that as the tax was levied on the ship, and not on the cargo, it should not be considered as a Customs' duty.—Paris Tribunal of Commerce.

EXORBITANT CHARGES FOR LANDING PASSENGERS.—G. J. Evans, a waterman, was recently summoned to appear before the Court at the Waterman's Hall, on a charge of overcharging a passenger, who landed

from the Bremen steamer, in the Pool, on Sunday, the 15th ult. The Court, after hearing the evidence of the witnesses, considered the charge proved, and inflicted the full penalty of 40s.

REWARDS.

To Captain Reverdy Ghiselin, master of the American ship *American Congress*, of New York, an aneroid, for his humanity and kindness to the master and crew (ten in all) of the brigantine *Ann Banfield*, of Scilly, whom he rescued from their sinking vessel on 4th November, 1871.

To Captain Oswald Miller, of the United States ship *Agra*, of Boston, Mass., a gold watch, in recognition of his humanity to the crew of the ship *Corinuja*, of Glasgow, in May, 1872.

A gold medal from the French Government to Mr. Stephen Dix, of the Royal Mail Steam Packet Company's steamship *Mersey*, for services to the French transport *L'Amazone*, off Porto Rico, on 17th October, 1871.

Second-class silver medals have been awarded by the French Government to each of the under-named, for services rendered in the Calais lifeboat on 17th November, 1871, to the crew of the French barque *Catharine*, of St. Malo:—Mr. William Johnson, mate; Maurice Derby, Edward Smith, seamen, of the ship *Charlotte*, of Goole. Mr. John Lee, mate, of the ship *Laura Williamson*, of Boston. James Gooding, Henry Gilmour, seamen, of the *Ethel*, of Faversham: Joseph Banter (or Barte), seaman, of *Friendship*, of Hartlepool. Isaac Bourne, seaman, of the *Allerton Packet*, of Stockton.

A telescope from the French Government to Mr. Edward Kent, master of the ship *Le Teaser*, of Jersey, for rescuing and taking to Morlaix, the crew of the French lugger *La Fanny*, wrecked at sea on the 81st January, 1872.

A gold watch, from the President of the United States, to Captain William Williams, of the ship *Caspian*, of Liverpool, for conveying to Callao the master and crew of the American ship *Grace Sargent*, of Yarmouth, Maine, which vessel foundered at sea in lat. 47° S., and long. 82° 38' W., and for treating them with great kindness.

A gold watch, from the President of the United States, to Captain Heman S. Rich, of the barque *Order*, of Picton, N.S., for rescuing the crew of the American schooner *Zeyla*, of Boston, in March, 1872.

A gold watch, from the President of the United States, to Captain George A. Morris, of the barque *Sarah Crowell*, of Yarmouth, N.S., for services to the officers and crew of the American schooner *General Banks*, of Boston, Mass., abandoned at sea on 24th February, 1872.

ALBERT MEDAL.—Her Majesty has been graciously pleased to award the decoration of the Albert Medal of the first-class to each of the under-mentioned gentlemen, for their gallant services in rescuing life on the night of the 9th August, 1871, when the schooner *Anne*, of Hong Kong, and the French barque *Adèle*, were in imminent danger during a violent typhoon at Ke-lung Harbour, on the North Coast of Formosa—viz., to Mr. Augustus Raymond Margary, assistant in H.M.'s Consular Service in China, and Mr. John Dodd, a British merchant residing at Ke-lung.

BOARD OF TRADE INQUIRIES AT HOME.

41. *Little Western*, of Scilly, stranded near Samson Island, Scilly Islands, 6th October. Inquiry ordered 12th October. Captains Hight and Inspecting Officer, N.A. Mr. Hargrave Hamel conducted the case. Master's certificate suspended for six months.

42. *May Queen* (s.s.), of London, stranded in West Hartlepool Bay, 20th September. Inquiry ordered 15th October. Captains White and Steele, N.A.

43. *Elizabeths*, of Shields, stranded on the Hasboro' Sand, 80th September. Inquiry ordered 15th October. Captains White and Steele, N.A.

INQUIRIES ABROAD.

89. *Sea Queen*, stranded at Port Alfred, 21st June. Inquiry held at Port Alfred, before G. Hudson, Esq., Resident Magistrate. Master exonerated. Casualty occurred whilst in tow of tug.

90. *Cameronian*, of Liverpool, abandoned off Cape Horn, 16th July. Inquiry held at Valparaiso, before J. de V. D. Hay, Esq., Consul, President, Lieutenant N. Shield, R.N., and Captain H. Melmore, master mariner. Master justified in abandoning vessel, considering the state of the weather, and the vessel having lost her rudder. Mate severely reprimanded for his apparent ignorance of the master's intention of leaving the vessel.

91. *Atalanta*, of Liverpool, had her propeller disabled at sea, 24th July. Inquiry held at Negombo, before T. B. Stephen, Esq., Receiver and J.P., and J. W. Schokman, Esq., Sub-Collector. No blame attributable to master or officers. Casualty caused by the extremely tempestuous weather.

CYCLONE AT MADRAS.—The Board of Trade have, with the concurrence of the Indian authorities, shortened the times of suspension of the certificates in these cases, and have returned the certificates from the 1st November instant. We are glad this is done; but cannot share the opinions expressed by some of our contemporaries as to the sentence of the Madras Court. The sentences showed that a British shipmaster

is not justified in remaining on shore when bad weather is anticipated or even exists, and his ship is in the offing, especially when native boats could and did go out with passengers and provisions, and the sentences show further that a British shipmaster must trust to himself to take measures against approaching storms, and cannot be allowed, after a disaster, to plead that some one else ought to and did not warn him of danger.

SHIPPING AND MERCANTILE GAZETTE CORRESPONDENCE.

(Reprinted by special arrangement with Sir WILLIAM MITCHELL.)

NEAP TIDES.—A shipmaster states that he has chartered his ship with the following clause in the charter-party:—"Ship to be loaded to 21 feet; 20 working days to be allowed for loading. But if head winds or neap tides prevail at the expiration of said days, preventing vessels of similar size or draught from leaving the dock or sailing, then the vessel to continue taking cargo as above, without the charterers being liable for demurrage," and asks whether, if the ship is not loaded, and draws less water than there is in the dock at the expiration of the lay-days, she is entitled to demurrage during the neap tides or not?—If neap tides set in on the close of the twentieth lay-day, precluding vessels of similar size and draught of water from leaving the dock, and the shipmaster's ship was not loaded, the merchant could continue taking cargo, and the ship would not be entitled to demurrage. If the shipmaster's ship was not loaded to 21 feet on the expiry of the twentieth day, and vessels of that draught could not get out, the merchant has the benefit of the neap tides.

RAFTING OF TIMBER.—A shipmaster writes:—I chartered my vessel to load a cargo of sleepers, with the following clause in the charter-party:—"The cargo is to be loaded without delay, and to be delivered here (port of loading) alongside of the vessel, and at the port of delivery to be taken from alongside, free of expense to the ship." On arriving at port of discharge (West Hartlepool) my vessel is berthed, and I commence to discharge the sleepers into the water. After discharging the whole of the first day, and the merchant, not having sent any one to take charge of the cargo and raft it, I requested him to do so, upon which he informed me that it was the custom of the port for the captain to raft the sleepers. I have, therefore, been compelled, at considerable expense to the vessel, to engage men to raft them. Can the custom of the port overrule the clause in my charter party?—It is the general custom for all expenses incurred after cargo is discharged to be paid by the merchant, and the shipmaster should not pay for rafting of timber. Timber rafted may be detained for freight. If, therefore, any deduction is made for rafting out of the freight, the cargo should be held for full freight, as per charter-

party. Custom at West Hartlepool, or elsewhere, cannot set aside a written contract.

ADVANCE NOTES AND NECESSARIES.—An "Outfitter" asks :—1st. Three seamen sign articles for a voyage. They receive advance notes, which I discount, but they fail to proceed to sea with the ship, on the ground (according to their statement) that the captain ordered them ashore. They cannot produce any discharge note, and have shipped on board another vessel, and refuse to refund or make good the amount advanced to them. What is my best course to adopt under these circumstances? 2nd. A vessel belonging to the south of England puts into Peterhead through stress of weather. The captain goes on shore and buys provisions for the use of the ship's crew, requesting the account to be sent to his owner. Is the owner liable for the debt so contracted?—1st. If the men were discharged without fault on their part, they would be entitled to one month's pay; but this would have to be recovered by the men themselves. If the men deserted, the owner would not be liable for any wages, and would not be bound to pay the advance notes. In the latter case, the only remedy would be against the men for moneys had and received. 2. If the necessaries furnished to the master of the vessel, on the express stipulation that the account was to be sent to the owner, were immediately required for the use of the crew, and not for the entire voyage, and limited to urgent wants, the shipowner would be liable for the provisions supplied.

DEVIATION.—A policy of insurance is subscribed for a voyage from Odessa to a port of the United Kingdom or the continent, "with liberty of call." Is Kertch to be considered a port of call?—The implied condition in a policy of marine insurance is not to deviate. A deviation, in the legal sense, has been defined "to be any unnecessary or unexcused departure from the usual course or general mode of carrying on the voyage insured, by which the risk is altered, though the original *terminus ad quem* of the voyage is still kept in view." If, therefore, the policy was an open one for a Black Sea voyage, with "liberty to call," the ship could go from Odessa to Kertch in the lawful prosecution of the voyage. If, however, the policy was for a voyage to the United Kingdom, with "liberty to call," that would imply calling *en route*, and not deviating out of the course so far to the eastward as Kertch.

MORTGAGE OF SHIP.—I have bought a ship on which a mortgage is registered for £500. Half of this I paid off at the time of purchase, and, on the seller's promise (in the presence of two witnesses) to reduce the deed to £250, I handed him my acceptances for £250, and conditionally promised to hand him policies of insurance for this amount. The seller declines to reduce, and, finding him to be a most unprincipled man, I have declined to hand him the policies of insurance except under protest,

or on the mortgage being reduced as promised. He has given me notice that he has insured himself at any cost. Firstly. Can I compel the seller to reduce the mortgage, and how? Secondly. Can I refuse payment of my acceptances until it is done? Thirdly. If I cannot compel him to reduce, and must pay my acceptances, what steps must I take to prevent him from transferring the mortgage for the full £500 to some one else? Fourthly. If the seller will release the mortgage, and hand the deed to his solicitor, can the solicitor refuse to release the ship because the seller has not settled the solicitor's costs connected therewith? Fifthly. In negotiating a loan through a solicitor, who pays his costs—the mortgagee or mortgagor? The principal being paid, can the solicitor legally refuse to hand over the mortgage released until his costs are paid? Sixthly. Is not the seller bound to receive the policies under protest?—1st. If the seller was also the mortgagee, our correspondent can compel him either to refund the money paid, or reduce the mortgage by that amount. 2nd. The acceptances must be paid when due, unless obtained by fraud. 3rd. If the seller transfers the mortgage under the circumstances, he would be liable to a criminal prosecution, and notice should at once be given at the Custom House that a portion of the mortgage money has been paid off. 4th. The solicitor may hold any papers belonging to his client for his costs. 5th. The borrower, as a rule, pays the costs of raising money. (See also answer to query No. 4.) 6th. The protest may be left with the seller, but he is not bound formally to acknowledge it.

AFLOAT CLAUSE.—A vessel chartered “to proceed to Goole, or so near thereto as she can safely get,” arrived in Hull roads on the 10th inst., during neap tides, and for want of water had to wait there eight days. Captain gives notice that the time spent in Hull roads must count as part of lay-days. Charter states that “lay-days are to count from the day of arrival, and being reported at Custom House” (“*Le stallis correnti da numerarsi dal di dopo l'arrivo ed ammesso a pratica*”). Captain reported at Goole Custom House on the 18th inst., the collector of Customs thinking at the time that the vessel had arrived in port. Can the days spent in Hull Roads waiting for water be claimed as part of lay-days, or do they count only from the date of arrival at Goole—viz., the 18th inst.?—The lay-days were to count from the time of the vessel's admission to pratique. The charter-party is an open one to some extent, and must, therefore, be explained by usage. Arrival means, unless specially stipulated otherwise, the arrival of a vessel at her regular place of discharge in a port, or as near thereto as she can safely get at the top of spring tides, or after being lightened, and not her arrival in a roadstead, or at a place beyond the boundary of the port. While the ship was outside the port she could not be at the command of the charterer to unload.

MONTHLY ABSTRACT OF NAUTICAL NOTICES.

No.	PLACE.	SUBJECT.
173	CHINA—Wusung River	Establishment of a Light.
174	CHINA—Wusung River—Light-junk	Discontinuance of Light.
175	CHINA—Foochow—Middle Dog Island	Establishment of a Light.
176	NOVA SCOTIA—Halifax—Chebucto Head	Establishment of a Light.
177	NOVA SCOTIA—Liscomb Harbour—Liscomb Island	Establishment of a Light.
178	NOVA SCOTIA—Canso Harbour—Hart Island	Establishment of a Light.
179	NOVA SCOTIA—West Arichat Harbour—Jersey- man Island	Establishment of a Light.
180	CAPE BRETON ISLAND—North-West Coast—Chetti- can Island	Establishment of a Light.
181	CAPE BRETON ISLAND—Sydney Harbour	Establishment of a Light.
182	GULF OF ST. LAWRENCE—Seven Islands—Carousel Island	Destruction of Lighthouse.
183	UNITED STATES—Maine—Seguin Lighthouse	Establishment of Fog Signal.
184	BRAZIL—Ceara Bay—Point Macoripe	New Light.
185	ST. LAWRENCE RIVER—Manicouagan Shoal	Establishment of a Light-vessel
186	SCOTLAND—Sound of Iona—Dubh Artach Rock	Establishment of a Light.
187	SCOTLAND—Sound of Islay—Rudha Mhail Light	Alteration in Light.
188	JAPAN—Isumi Strait—Tomangia Sima	Establishment of a Light.
189	MEDITERRANEAN—France—Port Bandol	Establishment of a Light.
190	MEDITERRANEAN—Egypt—Alexandria	Establishment of a Light.
191	ENGLAND—South Coast—Owers Light	Intended Alteration in Light.
192	NEW ZEALAND—Middle Island—Akaroa Harbour	Discovery of a Sunken Rock near.
193	FRANCE—West Coast—St. Jean de Luz Bay	Alteration in Lights.
194	ADRIATIC—Porto Re—D'Ostro Point	Establishment of a Light.
195	ADRIATIC—Lucietta Rock	Establishment of a Light.
196	MEDITERRANEAN—Sicily, South Coast—Licata	Establishment of a Temporary Light.
197	SOUTH AUSTRALIA—Spencer Gulf—Long Point	Discovery of a Sunken Rock near.
198	SOUTH AUSTRALIA—Spencer Gulf—Point Lowly	Establishment of Buoys near.
199	SOUTH AUSTRALIA—Spencer Gulf—Yatala Harbour	Establishment of a Buoy near.
200	ADRIATIC—Port Gravosa—Pettini Rocks	Establishment of a Light.
201	ADRIATIC—Carpola Island	Establishment of Beacons.
202	IONIAN ISLANDS—Fano Island—Point Kastri	Establishment of a Light.
203	GULF OF BOTENIA—Karlo—Maria Point	Establishment of a Light.
204	BALTIC—Lubeck Bay—Pool Island—Timmendorf	Establishment of a Light.
205	HOLLAND—Zuider Zee—Harlingen	Alteration in Lights.

NAUTICAL NOTICES.

173.—CHINA.—*Wusung River*.—In accordance with Notice No. 60 (March number) the light for navigating the channel at the entrance of the river from the Yangtze is now exhibited. The light is a *fixed white* light over the navigable channel, and a *fixed red* light on each side of the navigable channel; it is elevated 50 feet above the sea, and should be seen 12 miles. The tower, built of brick, is square, and 58 feet high. Position, lat. $31^{\circ} 23' 22''$ N., long. $121^{\circ} 29' 35''$ E. The light, when seen from the centre of the navigable channel, bears S.W. by W. $\frac{3}{4}$ W.

174.—CHINA.—*Wusung River*.—The light-junk at the entrance of the river has been removed and the light discontinued.

175.—CHINA.—*Foochow*.—*Middle Dog Island*.—A first order light is exhibited on the north-east end of the island near the entrance to the Min river. It is a *fixed white* light, varied by a *bright flash every half minute*, visible from seaward between the bearings of E. by S. $\frac{3}{4}$ S., through south and west to N.E. $\frac{1}{2}$ N. The light is obscured when bearing from E. by S. $\frac{3}{4}$ S., round by east to N.E. $\frac{1}{2}$ N., by the Tongsha and Middle Dog islands, except between the bearings of east, and E. $\frac{3}{4}$ N., and of N.E. by E. $\frac{1}{2}$ E., and N.E. by E.; it is 257 feet above the sea, and should be seen 22 miles. The tower with dwellings and boundary wall are painted white. Position, lat. $25^{\circ} 58' 20''$ N., long. $120^{\circ} 2' 20''$ E.

176.—NOVA SCOTIA.—*Halifax*.—*Chebucto Head*.—A *revolving white* light, showing a flash *every minute*, is now exhibited 132 feet above high water, and should be seen 18 miles. The light is to guide vessels into Halifax harbour, and to mark the dangers of Duncan reef and Bell rock, a little south of Chebucto head. Position, lat. $44^{\circ} 30' 21''$ N., long. $69^{\circ} 30' 49''$ W.

177.—NOVA SCOTIA.—*Liscomb Harbour*.—*Liscomb Island*.—A *revolving* light, showing alternate *red* and *white* flashes *every two minutes*, is now exhibited, it is elevated 64 feet above high water, and should be seen 85 miles. The tower is painted red. Position, lat. $44^{\circ} 59' 20''$ N., long. $61^{\circ} 57' 51''$ W.

178.—NOVA SCOTIA.—*Canso Harbour*.—*Hart Island*.—A *fixed red* light is now exhibited 42 feet above high water, and should be seen 12 miles. The light is to guide vessels into Canso harbour, and through Canso, both north and south. Position, lat. $45^{\circ} 21' 0''$ N., long. $60^{\circ} 58' 31''$ W.

179.—NOVA SCOTIA.—*West Arichat Harbour*.—*Jerseyman Island*.—A *fixed red* light is now exhibited 89 feet above high water, and should be seen 11 miles. The light is to guide vessels through Crid passage, in and out of West Arichat harbour. Position, lat. $45^{\circ} 30' 20''$ N., long. $61^{\circ} 3' 4''$ W.

180.—CAPE BRETON ISLAND.—*North-west Coast.—Chetican Island.*—A revolving white light, showing a flash every forty-five seconds, is now exhibited about 149 feet above high water, and should be seen 20 miles. The tower is a square wooden building, 24 feet high, painted white, with a black ball seven feet in diameter on the seaward side, to distinguish it during the day from the Sea Wolf Island lighthouse. Position, lat. 46° 36' 32" N., long. 61° 3' 0" W.

181.—CAPE BRETON ISLAND.—*Sydney Harbour.*—A fixed red light is now exhibited on the west end of the South bar, elevated 80½ feet above high water, and should be seen 10 miles. Position, lat. 46° 12' 40" N., long., 60° 12' 40" W.

182.—GULF OF ST. LAWRENCE.—*Seven Islands—Carousel Island Lighthouse* has been destroyed by fire, and the light, consequently, discontinued.

183.—UNITED STATES.—*Maine.—Seguin Lighthouse.*—A steam fog-whistle has been established. During thick or foggy weather the whistle will be sounded in blast of eight seconds duration, with intervals of fifty-two seconds.

184.—BRAZIL.—*Ceara Bay.—Macoripe Point.*—A new light is now exhibited on the site of the old one. The light is a revolving white light of the fourth order, attaining its greatest brilliancy every minute; it is elevated 85 feet above the sea, and should be seen 12 or 18 miles. The tower is 50 feet high. Position, lat 3° 42' 5" S., long. 38° 27' 31" W.

185.—ST. LAWRENCE RIVER.—*Manicouagan Shoal.*—An iron light-vessel has been placed off the southern edge of the shoal, on the north shore of the river, below Quebec. The vessel exhibits two white lights from different masts, 24 feet and 27 feet above the deck, and they should be seen 12 miles. The light-vessel is moored in 25 fathoms water, 1¼ miles to the southward of the shoal, and 3¼ miles from the shore, with Manicouagan point bearing N.E., and Outard point W.N.W.; she is painted black, with the words Manicouagan, Quebec, on her stern, in large letters. Position, lat 49° 2' 40" N., long. 68° 14' 20" W. In thick or foggy weather, a steam fog-whistle will be sounded as follows:—A blast of eight seconds duration, then an interval of eight seconds, then a blast of eight seconds, after which an interval of two minutes and twenty seconds.

186.—SCOTLAND.—*Sound of Iona.—Dubh Artach Rock.*—A fixed light, of the first order, showing white all round the horizon, except towards the southern shore of Iona and the Torranan rocks, between the bearings of W. ½ N., and S. by W. ½ W., where it is a fixed red light, is now exhibited on the rock. It is elevated 145 feet above high water, and should be seen 18 miles. Position, lat. 56° 8' N., long. 6° 38' W. In foggy weather, a bell will be rung quickly for about ten seconds, at intervals of thirty seconds.

187.—SCOTLAND.—*Sound of Islay.*—*Rudha Mhail.*—The *fixed* light is altered, so as to show *red* to seaward, in a westerly direction, between the bearings of S.S.W. $\frac{1}{2}$ W. and E. by S., where it will be cut off by the north coast of Islay. In all other directions it remains white as before.

188.—JAPAN.—*Isumi Strait.*—*Tomangai Sima.*—A *fixed white* light, of the third order, visible from N. $\frac{1}{2}$ W., round by east and south to S.W. by W., is now exhibited on the island; it is elevated 208 feet above the level of the sea, and should be seen 19 miles. The tower is situated at the western extreme of the island. Position, lat. $34^{\circ} 16' 40''$ N., long. $185^{\circ} 0' 80''$ E.

189.—MEDITERRANEAN.—*France.*—*Port Bandol.*—A *fixed red* light is now exhibited from an iron pillar on the extremity of the mole, elevated 82 feet above high water, and should be seen 5 miles. Position, lat. $43^{\circ} 7' 57''$ N., long. $5^{\circ} 45' 18''$ E.

190.—MEDITERRANEAN.—*Egypt.*—*Alexandria.*—A *red* light is exhibited from a floating pontoon, twenty yards from the end of the breakwater, now in course of construction. The light is 25 feet high, and should be seen 6 miles. A red flag will be shown from the pontoon during the daytime.

191.—ENGLAND.—*South Coast.*—*Owers Light.*—On or about the 1st April, 1873, the light will be altered from a *fixed*, to a *revolving* light, showing white and *red flashes*, at intervals of *half a minute*, in the order of two white and one *red*. Further notice will be given when the above change has been effected.

192.—NEW ZEALAND.—*Middle Island.*—*Akaroa Harbour.*—Information has been received of the existence of a rock, lying about half a mile S.W. from the rocks off the south head of Akaroa harbour, Banks peninsula. The rock (*Wright rock*) is pinnacle shaped, having, it is reported, about 11 feet water on it at low water, and only breaks in a very heavy sea. No kelp marks the locality.

193.—FRANCE.—*West Coast.*—*St. Jean de Luz Bay.*—The following alteration will be made in the lights:—The *fixed green* light at the head of the port is exhibited from a tower recently erected and now visible through an arc of 10 degrees on each side of the leading mark; it is elevated 52 feet above high water, and should be seen 7 miles. The tower is 46 feet high, and is 491 yards behind the green light of the eastern jetty. Position, lat. $43^{\circ} 28' N.$, long. $1^{\circ} 40' W.$

Socoa Light.—A ray of *red* light is exhibited, visible through an arc of $17\frac{1}{2}$ degrees, and indicating to vessels making the roadstead, the point where the leading mark of the two green lights terminate, being the position to turn to starboard for the anchorage.

Sibours Light.—The *fixed red* light exhibited at the jetty head is discontinued.

Directions.—Vessels entering the roadstead in the night should keep the two green lights in one, and as soon as the red light of Socoa is seen, steer S.W. by S., and anchor when Socoa light appears white.

194.—ADRIATIC.—*Porto Re.*—*D'Ostro Point.*—A light is now exhibited from a lighthouse recently erected on D'Ostro point, south point of Porto Re, Gulf of Quarnero. The light, of the fifth order, is a *fixed* and *flashing* white light, showing a flash *every three minutes*, preceded and followed by a short eclipse, elevated 54 feet above the sea, and should be seen 13 miles. Position, lat. 45° 15' 20" N., long. 14° 33' 35" E.

195.—ADRIATIC.—*Lucietta Rock.*—A *fixed* and *flashing* white light, of the fourth order, showing a flash *every thirty seconds*, is now exhibited on the rock, elevated 128 feet above the sea, and should be seen 17 miles. Position, lat. 43° 37½' N., long. 15° 34½' E.

196.—MEDITERRANEAN.—*Sicily, South Coast*—*Licata.*—A temporary fixed white light is now exhibited on the extremity of the breakwater, it is elevated 16 feet above the sea, and should be seen about 5 miles.

Note.—Vessels taking shelter in easterly winds must pass more than half a cable from the light.

197.—SOUTH AUSTRALIA.—*Spencer Gulf.*—*Long Point.*—A rock having only 4 feet water on it at low water, is stated to exist about N.W., a short mile from the Walrus rock, off Long point. As this danger lies in the track of small vessels proceeding to and from Moonta and Wallaroo, they are recommended to give the neighbourhood a wide berth.

198.—SOUTH AUSTRALIA.—*Spencer Gulf.*—*Point Lowly.*—A red nun buoy has been placed on the south end of the eastern shoal, in 21 feet at low water springs, with Mount Young bearing W. ½ N. and Point Lowly N. by E. and a low cylindrical buoy with beacon on the top, painted red, has been placed on the south-west end of Wards spit in 18 feet, with Point Lowly N.W. 3¼ miles, and the beacon on the north-west end of the Spit N.E. by N. ¼ N. 1½ miles.

199.—SOUTH AUSTRALIA.—*Spencer Gulf.*—*Yatala Harbour.*—A low cylindrical buoy, with beacon on the top, painted red, has been placed on the edge of the sand pit to the southward of the harbour in 17 feet at low water springs, with Mount Grainger bearing N.N.E. ¼ E. and Mount Gullet E. by S.

200.—ADRIATIC.—*Port Gravosa.*—*Pettini Rocks.*—A *fixed* white light, of the sixth order, is now exhibited on the outer rock, entrance of Port Gravosa, elevated 88 feet above the sea, and should be seen 8 miles.

201.—ADRIATIC.—*Curzola Island.*—Beacons have been built to mark the shoals of Plagnac island and the Badia rocks, east end of Curzola channel. The beacon near Badia rock is erected in 4 feet, and that

near Plagnac rock, in 5 feet water. The beacons are cylindrical in form with square base, surmounted by an iron rod and skeleton ball. The masonry is about 3 feet above the sea.

202.—IONIAN ISLANDS.—*Fano Island*.—*Point Kastri*.—A fixed and flashing white light, showing a red flash every minute of the second order is now exhibited, elevated 346 feet above the sea, and should be seen 25 miles. The tower, painted white, is attached to the keeper's dwelling; it is 360 yards from the point. Position, lat. $39^{\circ} 51\frac{1}{2}'$, long. $19^{\circ} 27' E$.

203.—GULF OF BOTHNIA.—*Karö*.—*Maria Point*.—A fixed and flashing white light of the fourth order, showing a flash every forty seconds, visible from N.N.E. $\frac{1}{2} E.$, by east to S.W. $\frac{1}{2} W.$, is now exhibited on the west extremity of the island, elevated 100 feet above the sea, and should be seen 15 miles. Position, lat. $65^{\circ} 2\frac{1}{2}' N.$, long. $24^{\circ} 4' E$. The lighthouse serves as a signal station for pilots.

204.—BALTIC.—*Lubeck Bay*.—*Poel Island*.—*Timmendorf*.—A fixed white light, of the fifth order, is exhibited from the tower of the pilot station at Timmendorf, on the north-west extremity of the island, elevated 60 feet above the sea, and should be seen 10 miles. Position, lat. $54^{\circ} 0' N.$, long $11^{\circ} 23' E$.

Directions.—Vessels entering Wismar bay at night should bring the light to bear S.W. $\frac{1}{2} S.$ and steer for it, which course will clear the 4 fathoms shoal, and lead between the Hannibal Grund a Wüstrow reef into the great deep, where there is 6 and 7 fathoms, with soft sandy bottom. Vessels can anchor here in safety.

205.—HOLLAND.—*Zuider Zee*.—*Harlingen*.—The red harbour light on the Old North Mole has been replaced by a fixed white light. The new entrance to the harbour is now navigable and lighted by a red light elevated 20 feet above high water.

CHARTS, ETC., PUBLISHED BY THE HYDROGRAPHIC OFFICE, ADMIRALTY
in October, 1872.

No.	Scale.		s.	d.
2114	m = 9·8	West Indies, Costa Rica, Port of Limon ...	0	6
754	m = 8·0	Bay of Bengal, Dumrah river entrance ...	0	6
755	m = 8·0	Bay of Bengal, false point anchorage, and entrance to Jumboo river ...	1	0
756	m = 8·0	Bay of Bengal, Mahanuddee and Davey rivers entrances ...	1	0
2449	m = 1·55	British Columbia, Lama passage, and Scaforth channel ...	2	6
2190	m = 8·0	British Columbia, Nass bay ...	1	6
2458	m = 1·0	British Columbia, Brown and E dye passages ...	2	6
993	m = 2·5	Japan, Yezo, Otterranaï anchorage, and Endermo harbour ...	1	6

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.

PROMOTIONS.—**Cr.**—Seymour H. P. Dacres, 1868. **St. Cr.**—Edward C. Smyth, 1861. **L.**—Hon. Basil Napier, 1871; William C. C. Forsyth, 1869. **N. L.**—John Stocker, 1866; Edward R. Connor, 1866; Henry J. Chalke, 1866; Alfred E. Stanley, 1866; and T. Hawkins Smith, 1866. **C. E.**—Edwin G. Ashworth, 1861; James Bannerman, 1861; John T. Harris, 1861.

APPOINTMENTS.—**C.**—Leveson E. H. Somerset, 1862, to *Favourite*; Joseph S. Hudson, 1867, to *Spartan*; John C. Hopkins, 1867, to *Narcissus*; George J. Malcolm, 1866, to *Briton*; Algernon M'L. Lyons, to *Immortalité*; Edward Hardinge, 1863, to *Topaze*; William H. Edye, 1865, to *Doris*; Norman B. Bedingfield, 1862, to *Valiant*. **Cr.**—John F. G. Grant, 1867, to *Iron Duke*, for *Midge*; Francis R. Blackburne, 1867, to *Swiftsure*; Thomas M. Macquay, 1867, to *Ringdove*; John R. T. Fullarton, 1872, to *Narcissus*; Comton E. Domville, 1868, to *Immortalité*; Hon. Richard Hare, 1868, to *Myrmidon*; Herbert Dolphin, 1872, to *Doris*; Rodney M. Lloyd, 1870, to *Topaze*. **St. Cr.**—Frederic Townsend, 1871, to *Narcissus*; John Thompson, 1867, to *Vivid*. **L.**—Frederic A. Blackett, 1871, Frederic H. Johnstone, 1871, and Charles J. Norcock, 1871, to *Iron Duke*, additional; John W. Ramsay, 1867, to *Lord Warden*, as Flag Lieutenant; Day H. Bosanquet, 1863, to *Victoria and Albert*; Wentworth V. Bayly, 1869, to *Iron Duke*, for *Ringdove*; Philip R. Rickman, 1869, to *Valorous*; Alexander Cochran, 1868, to *Midge*; Reginald O. C. B. Brenton, 1872, to *Iron Duke*, for disposal; Tom H. Falcon, 1863, George W. Hill, 1866, Herbert W. S. Gibson, 1867, Charles Q. G. Craufurd, 1871, and Henry K. Gregson, 1872, to *Narcissus*; James Hazel, 1868, and William C. J. Blount, 1865, to *Excellent*; Sidney A. Holt, 1872, and John D'A. Irvine, 1858, to *Favourite*; Alan B. Thomas, 1865, Arthur H. Byng, 1867, Edward A. Holbeck, 1869, Herbert J. B. Garbett, 1867, and Guy Mainwaring, 1869, to *Immortalité*; Arthur K. Wilson, 1861, and John R. Prickett, 1872, to *Narcissus*; Colin H. P. Jones, 1872, and John L. Burr, 1872, to *Excellent*; Herbert W. S. Gibson, 1867, Edward G. Festing, 1867, Eustace D. Maude, 1871, William L. Morrison, 1872, and Sacheverel C. Darwin, 1866, to *Doris*; John Hext, 1865, to *Decoy*, in command; William H. Bond, 1863, to *Mosquito*, in command; Oswald B. Niven, 1867, to *Sultan*; William B. Forbes, 1870, to *Excellent*; George Izat, 1871, to *Myrmidon*; Douglas M. Forsyth, 1872, to *Ganges*. **N. L.**—

Selwyn S. Sugden, 1864, to *Favourite*; Edmond C. Smith, 1866, to *Topaze*; Henry Smith, 1867, to *Doris*; Thomas Robertson, 1865, to *Immortalité*; Frederick A. Johnson, 1868, to *Asia*, for *Enchantress*. **S. L.**—James S. Mugeridge and Philip E. Cresswell, to *Iron Duke*; Abraham H. Lindesay, to *Midge*; Robert B. Maconochie, and Henry C. Kenyon-Slaney, to *Ringdove*; Charles W. Dickenson, to *Agincourt*; William P. L. Heyland, to *Lord Warden*; John C. P. Walcot, to *Iron Duke*; Charles S. Nicholson, to *Iron Duke*, for disposal; Andrew W. Rogers, to *Hart*, as supernumerary; Robert H. Stewart, Arthur Barrow, William C. B. Johnson, and Jasper E. T. Nicolls, to *Narcissus*; Arthur N. Heathcote, Albert C. Allen, Alfred T. Holmes, and William C. H. Hastings, to *Immortalité*; Lord George G. Campbell, to *Pembroke*; Francis B. B. Simpson, to *Narcissus*; Charles K. Purvis, Herbert D. Phelps, George F. Raggett, Richard M. Mansergh, and George E. H. Deacon, to *Topaze*; Hugh B. Rooper, Arthur Furlonger, Frederic G. Stopford, James N. Hurt, and John F. J. Ryan, to *Doris*; Ford E. W. Lambert, to *Immortalité*; John E. G. Bond, to *Narcissus*; William H. M. Dougal, to *Doris*; Andrew F. Balfour, to *Pembroke*, for *Challenger*; Leonard E. Dick, to *Duke of Wellington*, for *Minotaur*; Edward W. Speck, to *Myrmidon*; John W. W. Wells, Alexander W. C. Batten, Henry V. Baker, and Francis E. Ramsden, to *Valorous*. **N. S. L.**—Edward W. Wild, to *Narcissus*; Richard R. P. Hopley, to *Doris*. **M.**—Leicester F. G. Tippinge, Herbert B. Dillon, and James G. Duberley, to *Iron Duke*; Percy C. Roitt, to *Thalia*, supernumerary; Frederic L. Campbell, Frederic A. Warden, Hon. Seymour H. Fortescue, Arthur M. Field, Francis Wortley-Stuart, St. John R. H. Parlyb, Walter Bathurst, and James M. Caulfield, to *Narcissus*; Arthur T. Stuart, Wilfred Powell, Herbert S. Edmunds, John R. Childs, Frederic F. Fegan, James W. Litle, Alexander E. Bethel, Robert A. J. Montgomerie, George G. Haswell, Herbert M. Heathcote, Charles H. Bayley, and Gilbert De Highton, to *Immortalité*; Frederic H. P. W. Freeman, to *Narcissus*; William H. P. Mayford, Charles H. Robertson, Samuel Rawson, Alexander Lyon, Terence H. G. O'Brien, Charles E. Kingsmill, Francis E. Growbe, Frederic R. Gransmore, Oliver A. Stokes, John S. Clarke, Stephen S. Gray, to *Topaze*; Albert F. Arthur, Pieter J. V. Vanderbyl, Andrew F. H. Duncan, Francis G. T. Cole, Robert B. S. Wrey, Henry E. Goldfinch, and Frederic E. E. Brock, to *Doris*; Hans F. F. White, and Edward C. H. Helby, to *Immortalité*; Arthur G. Heathcote, to *Narcissus*; Charles G. May, and Charles H. Dare, to *Doris*; Edward G. Shortland, to *Narcissus*; Joseph J. G. Bickford, to *Immortalité*. **N.M.**—John G. Hough, to *Narcissus*; Lewis K. Bell, to *Doris*; Augustus L. Scott, to *Immortalité*. **N. Ct.**—Theophilus Burnand, to *Narcissus*. **C. E.**—George Mills 1866, to *Topaze*; John R. Johnson, 1855, to

Narcissus; Francis G. Barr, 1859, to *Immortalité*; Benjamin Barber, 1861, to *Doris*; James G. G. Dunn, 1860, to *Asia*, for *Inconstant*; William B. Stephens, 1864, to *Asia*, for *Volage*. **E.**—William H. Green, 1862, to *Indus*, for *Merlin*; William J. Grant, 1867, and William J. Pettit, 1870, to *Tamar*; William Inglis (*l.*), 1865, Richard T. Rundle, 1868, John W. Duspen, 1871, and John A. Lemon, 1871, to *Topaze*; James G. Barrow, 1862, James T. Page, 1863, and Hugh Duncan, 1864, to *Narcissus*; James Barber, 1861, Amos Pritchard, 1865, James Stephens, 1868, and John D. Wood, 1867, to *Immortalité*; John L. Weeks, 1864, David Crichton, 1867, Edward J. Humphries, 1871, and Frederic Moore, 1869, to *Doris*. **1st Class A. E.**—Richard J. W. Earl, 1870, to *Narcissus*. **Cn.**—Rev. Lorenzo Shepherd, B.A., to *Topaze*; Joseph W. Grimes, B.A., 1856, to *Pembroke*; Charles J. Corfe, B.A., 1867, to *Cambridge*; Frederic Gibbens, B.D., 1856, to *Black Prince*; Richard Adams, 1870, to *Malabar*; Frederic Davies, M.A. (and as Nava. Instructor), to *Narcissus*. **N. I.**—John Bowen, 1871, to *Topazel*. **St. Sn.**—William B. Dalby, M.D., 1870, to *Glasgow*; John R. Holman, M.D., 1868, to *Britannia*; Walter Lawrence, 1864, to *Glasgow*; Henry Slade, 1870, to *Topaze*; Frederick W. Blake, M.D., 1870, to *Narcissus*; Francis Y. Toms, 1872, to *Invincible*; Timotheus J. Haran, 1871, to *Glasgow*. **Sn.**—Arthur M'Kenna, M.D., 1864, to *Penelope*; Leonard H. J. Hayne, M.D., 1861, to *Doris*; James Thomson, 1864, to *Immortalité*. **A. Sn.**—Thomas H. Atkinson, 1862, to *Malabar*; John G. Clarke, 1863, to *Dasher*; Robert G. Bird, 1866, and William Coppinger, M.D., 1870, to *Topaze*; Edward Meade, 1862, and Frederic Taylor, M.B., B.A., 1870, to *Narcissus*; Benjamin H. M'Curdy, 1861, and Henry M. Levinge, M.B., B.A., 1871, to *Doris*; Charles G. Wodsworth, 1866, and Isaac H. Anderson, M.D., 1871, to *Immortalité*; William J. Volatti, 1872, to *Pembroke*. **P.**—Henry Cooper, 1850, to *Narcissus*; Charles S. Hills, 1865, to *Doris*; William H. Haswell, 1865, to *Topaze*; Henry P. Brenan, 1870, to *Myrmiden*. **A. P.**—William R. Weatherby, 1863, to *Plover*, in charge; James A. Perkins, 1865, to *Cambridge*; Alfred De Denne, 1863, and Henry S. Baskerville, 1870, to *Topaze*; Clement P. Penny, 1866, and John Hyde, 1871, to *Narcissus*; Warden H. E. W. Roberts, 1864, and Robert Wright, 1869, to *Immortalité*; Augustus A. Lyne, 1864, to *Cambridge*; Frederic R. G. Wright, 1864, to *Hercules*; Thomas R. B. Rogers, 1868, to *Resistance*; Joseph W. Chaster, 1869, to *Doris*; John T. K. Belam, 1869, to *Doris*. **Cl.**—Rice Harris Harris, to *Doris*. **A. Cl.**—Henry J. B. Montgomery, to *Immortalité*.

RETIREMENTS.—**Cr.**—George A. W. Welch, 1861. **L.**—Robert J. Hughes, 1867, as commander; Charles L. Rooke, 1869; Vincent J. English, 1867. **S. L.**—Salwey Browne, 1871. **N. S. L.**—Michael

C. Raymond, 1849; Edward Kearns, 1866; John Hutchings, 1852; John W. M. Burnett, 1869. **C. E.**—Edwin Boulton, 1852. **St. Sn.**—Walter Lawrance, 1864. **Sn.**—Johnstone Christie, M.D., 1856; Denis M'Carthy, 1870. **A. Sn.**—William Grant, M.D., 1864. **A. P.**—William E. Allen, 1852.

DEATHS.—**A. F.**—Sir Thomas John Cochrane, G.C.B., 1841. **Cn.**—Dawson Mayne, 1856, *r.* **Cr.**—William D'Aranda, 1854, *r.* **L.**—Herbert R. Holmes, 1860, *r.*

A NEW PLANET.—Mr. J. R. Hind has recently called attention, through the medium of *The Times*, to the existence of certain round, black, and sharply defined spots upon the sun's disc, which traverse it more rapidly than the ordinary solar spots, and lead astronomers to infer that one or more planetary bodies are revolving round the sun, within the orbit of Mercury. These, according to the theory of M. Le Verrier, based upon an unexplained motion in the planet's apsides, constitute a zone of asteroidal bodies within it. The appearance of these spots, at various intervals, has, on some occasions, been ascribed rather to comets than planetary bodies, but Mr. Hind has only been able to discover one instance wherein there appears any ground for a prediction which might possibly lead to the recovery of one object to which the observations relate. He thinks it possible that an unknown planet exists, at no great distance from the sun, which, from observations by Dr. Lescarbault, at Orgeres, in France, on March 26, 1859, and by Mr. Lummis, at Manchester, on March 20, 1862, and data founded by M. Le Verrier upon the observations of Dr. Lescarbault, would appear to have a revolution of 19·81 days, thus bringing us back, by a series of 57 revolutions, from March 26, 1859, to October 9, 1819, when Canon Stark observed on the solar disc, a black, well-defined, nuclear spot, quite circular in form, and as large as Mercury, which had, however, disappeared at 4.37 p.m., and could not be subsequently discerned. Mr. Hind calculates, on the assumption that the observations of Canon Stark and Dr. Lescarbault relate to the same object, that the next appearance of the hypothetical planet should be at about 10.0 a.m. on the 27th March, 1873, and suggests that during the whole of that day a very close watch be kept upon the sun's disc.

THE ROYAL GEOGRAPHICAL SOCIETY AND MR. STANLEY'S BANQUET.—The Royal Geographical Society has done now what it ought to have done long ago. It has admitted that Mr. Stanley's narrative as to finding Dr. Livingstone is true, and that his services were real; and the Society has given the plucky American a medal and a dinner.

Since the meeting, at which the Chairman stated that "It is Dr. Livingstone who has found Mr. Stanley, and not Mr. Stanley who has found Dr. Livingstone," a change has come—we may say, has come tardily—in the opinion of the society as regards Mr. Stanley and his labours. That the recognition of the Society is many months too late could not be forgotten, let the dinner and wine be ever so good, and the speakers be ever so genial. The feeling that the neglect of the Society was inexcusable, threw a shadow over the otherwise brilliant proceedings, and tended to place the Society and its congratulations in an unfortunate and somewhat ridiculous light. A contemporary (the *Globe*) says that "Sir Henry Rawlinson, in trying to account for the delay, rather increased the awkwardness of the situation, and surely no guest ever before received so elaborate an explanation of the reason why he had not been earlier invited. But for the public, which has watched the attitude assumed by the Society towards the young discoverer, no explanation can have much value. The men who, by their knowledge and their position, should have been the first to know the value of Mr. Stanley's labours and to support his credit to the world, now follow lamely in the footsteps of all England, after their guest of last evening has had to fight his battle alone. When Mr. Stanley first arrived in this country the medal of the Society would have been a precious gift and honour. The appreciation of geographers would then have gone hand in hand with that of the public, and unworthy suspicion would have been silenced at its source. But, coming at the eleventh hour, this mark of approval is apt to seem poor and useless, and is rather like the echo of what has been better, because more quickly, done by others. If anything were needed to raise Mr. Stanley in the estimation of the English public, it would be found in the good taste and good temper he displayed. It must have been very gratifying to Mr. Stanley to learn that the President does not believe him to be an impostor." We don't wish to be hard on the Society whilst we regret their tardiness. Let that tardiness be explained how it may; or be unexplained altogether, it is worse than a crime: it is a blunder which, however, we are glad to add, Mr. Stanley has magnanimously forgiven.

THE
NAUTICAL MAGAZINE.

NEW SERIES.

DECEMBER, 1872.

THE GENEVA ARBITRATION.

Were half the power that fills the world with terror,
Were half the wealth bestowed on camps and courts,
Given to redeem the human mind from error,
There were no need for arsenals and forts.*

THE passions of mankind are, perhaps, as fierce as ever they were, but they are more frequently controlled by reason. Insults, real and imaginary, are still resented, and revenged on the spot, but we are more accustomed to hold the angry hand than our forefathers. Grudges still smoulder, like fire, in our hearts, and suddenly and unexpectedly burst into flame; but we habitually suspect any unusual warmth of hostile feeling, search out its cause, and not seldom extinguish it voluntarily, before it has done any mischief. We are not less hasty or ill-tempered than our ancestors, but we are less confident of the justice of our anger, and less content to let the sun go down upon our wrath.

But the moral health resulting from this gradual subjection of passion to reason (which shows, in spite of the fears of sectarians, and the exultation of Atheists, that Christian ethics are slowly but surely leavening the whole mass of humanity, infidel and professing) has, till recently, exhibited but little tendency to spread from the individual to the nation. Quarrels have still been picked between the whole of one people and another, on grounds which would have been dismissed by a law court as insufficient to sustain an action; hundreds of thousands of

* Longfellow. "The Arsenal at Springfield."

men have been hurled together in conflict, for the satisfaction of an insult to "honour," which would not have justified a duel between individuals; and, lastly, the slow accumulation of hostile feeling between nation and nation, based on old grudges, and fostered by misunderstanding, has broken out into terrible wars, for which the combatants themselves have found it impossible to make out a reasonable case.

Of all roots of quarrel the last is the most enduring and deadly. Hot passions evaporate, insults are avenged and die, but the secret-working, undermining grudge, is a disease that penetrates the system, and renders the whole constitution morbid, unless it is checked in time. That two of the foremost nations of the earth should have been infected with such a disease, and, instead of plunging into an unreasoning and bitter war, should have agreed to hold their hands from bloodshed, and examine seriously the roots of the misunderstanding, with the aid of impartial friends, to the end that perfect health should be re-established at any cost, save that of honour, is a fact without precedent in the history of the world, and one which that world, whether regarding the terror of the danger which has been averted from it, or the beneficent example held up for the guidance of its future, can scarcely overvalue.

Naturally, there are few things more difficult than to believe in the purity of the motives which actuate those who differ from us in opinion; but there is one thing even more difficult, and that is, to allow that we are not adequate judges of the validity of our own beliefs. The United States believed that they had a grievance against Britain; Britain believed that the United States had none. After long and fruitless endeavours to convince each other, they both came to the wise conclusion that they were not adequate judges of their own cases, and had the courage to act upon it by referring the matter to arbitration. The result is, what is usually the case in disputes, that both were found to be partly in the right, and partly in the wrong; the Americans had a grievance, but they over-estimated it.

The proverb that "it takes two to make a quarrel," is like most proverbs, true only from one point of view. From another, the converse proposition, that it "takes two to prevent a quarrel," is equally true, and of this the present case is an illustration to all future ages. Not the one nation, nor the other, would have been of sufficient power by itself to have prevented an outbreak; concessions and restraint on both sides were necessary to preserve peace. We will not pause to consider to which nation the greater meed of praise is due. As the grievance was on their side, the United States had, perhaps, at the outset, the stronger passions to restrain; we, on the other hand, had to bear so much

unjustified abuse, and that of such an aggravating quality, that it was no easy matter to preserve our temper; now that the joint effort has been crowned by a joint success, we may both take our share of moral glory, and rejoice over the mutual and bloodless victory.

Let us state shortly what this great transaction has accomplished for the good of the world.

1. It has healed, we trust for ever, a long-growing and bitter animosity between two great nations, bound together by the closest ties of consanguinity; and this at a cost which is insignificant even from a commercial point of view.

2. It has averted the danger of a war, which might have done more to check the moral progress and civilization of the world than any struggle upon record.

3. It has established the principle that the duty of one nation towards another is to be judged, not by the precedents of existing laws, but by the highest and noblest known dictates of equity and justice.

It has, in a word, created national conscience.

4. It has exhibited the example of two nations, having the wisdom and moral courage to submit their passions to their reason, and to openly avow in the face of a world still worshipping the *fetish* of military glory, that war is bad, and peace is good.

We might easily swell the list, and, if we wished to glorify our own nation, might name among the minor, but still splendid, results of this arbitration, that memorable opinion of Sir Alexander Cockburn, which will hereafter worthily stand before the whole world, as a monument of the wisdom, the judgment, and the mental power of an English judge. But we have not space to do the one, nor desire to do the other. We have only one word more to add.

Great as the good that may be certainly expected to spring from the Geneva Arbitration, in lessening causeless bloodshed, and in promoting good feeling between nations, we cannot hope that it will make wars to cease.

As long as ignorant masses have passions, and Kings and statesmen have ambition, wars will not cease. As long as military glory is worshipped as a God, and territorial aggrandisement tempts like a devil, wars will not cease. As long as might tyrannises over right, and there are bullies and assassins among nations as among men, war *should* not cease. But the Arbitration will have its effect, and that in the direction of peace, if not on Kings and statesmen, assuredly on citizens and peasants. The former may not be less ready to say, "Fight," but the latter will be more prompt to ask, "Why?" That wars will ever cease,

we would not prophesy; but we may hope at least that this Arbitration may bring nearer the time when a right-thinking nation will only fight for the same reasons as a right-thinking individual—namely, for his life, or his honour, or for those of his friends.

THE BRITISH CONSTITUTION AND GOVERNMENT :
A DESCRIPTION OF THE WAY IN WHICH THE LAWS OF ENGLAND ARE
MADE AND ADMINISTERED.

(Concluded from our November Number.)

CHAPTER XI.—THE ADMINISTRATION OF JUSTICE—(Continued.)

THE Court of Probate, which decides all cases of disputed will and also disposes of all suits in matrimonial causes, sits in London only. The presiding Judge is equal in position to the *puisne* Judges of the Superior Courts.

The Court of Admiralty sits only in London, and decides all cases arising on the high seas. It has exclusive jurisdiction in respect of acts done upon the coast if beyond low water mark, and of all acts done on the water between low and high water mark; but the Courts of Common Law take cognizance of offences committed on the strand when the tide is out. All cases of seamen's wages, collision of ships, disputed ownership of vessels, charges for pilotage, salvage of wreck, and similar matters come within the jurisdiction of the Court of Admiralty.

When considering these cases, the Judge is always assisted by two Elder Brethren of the Trinity House, who sit on the bench with him, and aid him on nautical points.

The same Judge sits in the Court of Arches, which decides all ecclesiastical cases. Suitors appealing from this Court and the Court of Admiralty, go to the Judicial Committee of the Privy Council, which also considers all cases in which appeals are made from the decisions of the Colonial Courts.

Courts Martial are composed of officers of the Army or Navy, and sit for the trial of alleged breaches of discipline on the part of officers or men. They are authorised by the Crown, under the provisions of the Mutiny Act, and the Marine Mutiny Act, passed each year. The officers of the service not only sit as the Court, but also give the verdict as a jury. Courts Martial are assisted in the conduct of business by the Judge Advocate General, or his Deputy, or one appointed by the President of the Court to act in his stead, who sits as assessor, and advises the Court on points of law.

The Mutiny Act, however, provides that nothing contained in it shall exempt any officer or soldier from being proceeded against in the ordinary Courts of law for felony or misdemeanour, for the object of authorising Courts Martial is simply to secure the more speedy punishment of breaches of discipline.

Besides the superior Courts for the trial of graver matters, County Courts have been established for the more speedy and less costly settlement of civil actions. All claims for small debts are tried in these Courts, which are very numerous, and sit at short intervals. The matters coming before them may be tried either by the Judge alone, or by a jury at the option of the suitors. The jurisdiction of these Courts has been lately extended, and suits may now be decided in them which formerly could only be tried in the Court of Chancery. The County Courts have an Admiralty jurisdiction, and the County Court Judges also sit as Judges in Bankruptcy.

The Courts of Bankruptcy are resorted to by persons who cannot pay their debts, and who cannot make an arrangement with their creditors. The chief point to which the Judges of these Courts direct their attention is to see that the bankrupt makes a full disclosure of all his property for the benefit of his creditors; to afford him relief if he has become bankrupt by reason of misfortune and to delay relief if his bankruptcy is the result of reckless trading or dishonest practices on his part. Some traders have so little regard for the interests of others that they will buy goods upon credit for which they have no prospect of ever being able to pay, and will sell those goods for less than they cost, in order to provide themselves with money for some present necessity. This is morally as dishonest as theft, and it is against such practices that the Judges in Bankruptcy are appointed to protect the honest trader.

The office of Coroner is of great antiquity, and was once as distinguished as that of the Sheriff. As late as Edward I. none but knights were appointed to the office, but, in these days, its duties being almost altogether confined to enquiring as to the cause of any sudden or violent death, it is usual to appoint lawyers or medical men. And since the Coroner is appointed in the interest of the community, and for the protection of those in the district, he has, from the earliest times, been elected by the freeholders of the County Court in answer to a writ from the Sovereign to the Sheriff. He is appointed for life, but may be removed by the Crown for neglect of duty. There are usually four Coroners in each county, but, in several cases, additional Coroners have been appointed on a representation being made by the Magistrates to the Lord Chancellor that they were necessary. The duties of the Coroner are set forth in a statute passed in the fourth year of the reign

of Edward I., which is still the law of the land, and which says, among other things, "the Coroner, upon information, shall go to the places where any be slain, or suddenly dead, or wounded, and shall forthwith command four of the next town, or five, or six, to appear before him in such a place; and when they are come thither, the Coroner, upon the oath of them, shall enquire in this matter." The jury summoned by the Coroner in these days, however, numbers at least twelve.

In case of death on the high seas, the inquest is held by the Admiralty Coroner, who is appointed by the First Lord of the Admiralty, to whom the Coroner makes a return of the result of his inquisitions.

The Coroner sometimes acts in the place of the Sheriff, in cases, for instance, when the personal interest of the latter in the matter to be administered might give rise to a suspicion of partiality.

The cost of the administration of Law and Justice amounts to nearly £4,000,000 per annum, and sometimes even more.

MINOR OFFICES.

The Master of the Rolls, besides holding office as a Judge in Equity, is also Keeper of the Public Records, or guardian of the national archives, of which the Domesday Book may be regarded as the most ancient and the most notorious. Generally they may be said to consist of contemporaneous statements of the proceedings in the higher Courts of Law, and of ancient but authentic memorials of all branches of the Government, constitutional, judicial, parliamentary, and fiscal, from which historians are able to gather together the history of our progress as a people during at least eight centuries. These records are written upon parchment from nine to eighteen inches wide. In some cases the various skins lay one upon another, the whole being fastened together at the top by thongs, and in others they are sewn together, the top of one upon the bottom of the other, so as to form a continuous roll, after the custom of the Jews. The Domesday Book, however, is formed of two volumes bound in the same shape as an ordinary publication of the present day. The first volume consists of 382 folio pages, and the second of 450 pages half the size.

The King's or Queen's Remembrancer is appointed to remind the Commissioners of the Treasury, and the Barons of the Court of Exchequer of such things as are to be done for the Sovereign's benefit. Before the alienation from the Sovereign of the hereditary dues, this officer occupied a far more important position than he does now. He is, however, still associated with the Court of Exchequer, in its position as a Court of Revenue, and concerns himself in certain actions in that Court between private persons on the plea that the plaintiff is less able to

pay his debts due to the Crown, in the shape of taxes, on account of the alleged wrongs, done him by the defendant to the action. He also transacts much of the formal business connected with the Court of Exchequer, and in his own office registers all transfers of land to or from the Crown. His salary is £2,000 a year.

There is also a Remembrancer of the City of London, who keeps the Lord Mayor and Corporation informed of all matters before Parliament and the Privy Council and Treasury Boards, in which they are concerned. He has to give daily attendance in Parliament, to examine all the Bills presented in either House, and to report on such as are likely to affect the interest or privileges of the city. For this purpose the officers of both Houses are required to give him facilities of admission, and for purposes of identification by them he sometimes wears a medal, bearing the city arms. He also makes the necessary arrangements for the presentation of addresses from the City to the Sovereign, or Houses of Parliament.

Revising Barristers are officers appointed to hold Courts in the autumn throughout the country, for the purpose of revising the lists of voters for members of Parliament. If their decisions are appealed from, the Court of Common Pleas decides the disputed point.

The title of King's or Queen's Counsel is an honourable distinction conferred upon Barristers who are deemed worthy of it by the Lord Chancellor. By being nominated King's or Queen's Counsel, they are called within the bar, and are supposed to be retained in behalf of the Crown in all cases in which the State is concerned. By special licence, which is seldom refused, they may, however, appear for suitors as against the Crown.

The title of Serjeant-at-Law, is also an honourable distinction or degree conferred upon Barristers, which once carried with it substantial privileges now abolished. No one who is not a Serjeant-at-Law can be appointed Judge, but this is only a technical qualification, and those selected for the Bench are usually appointed Serjeants-at-Law one day and made Judges the next. Serjeants-at-Law wear the Coif.

CHAPTER XII.—NON-POLITICAL DEPARTMENTS.

ALL the Departments of the State described in previous chapters, are controlled by Ministers whose appointment depends upon political considerations. There are numerous other Departments whose chiefs hold their positions without regard to their political opinions, and retain them during good behaviour in the same way as those appointed to administer justice. Many of them, however, are more or less subject to one or other of the Political Departments.

THE TRINITY HOUSE.

The most ancient of these Departments and that which has most extensive jurisdiction is the Trinity House, recently made subject, in matters of finance, to the Board of Trade. The Trinity House was formally established by Sir Thomas Spert in 1514, and incorporated by Royal Charter, granted by Henry VIII., in the following year, but it is believed to have existed long before as an association for the protection of maritime interests. The Charter granted by Henry VIII. gave it authority to license and control pilots, and to erect beacons, lighthouses, and buoys along the coast for the guidance of mariners approaching our shores; duties which the Corporation discharges to this day. The earliest records of sea marks speak only of buoys and beacons in the River Tees and the Yarmouth Roads, and watch-towers, surmounted by burning coal, for the guidance of ships entering the harbour. The earliest record of a sea light for the guidance of passing ships is as late as the year 1600, when two lighthouses were erected by the Trinity House at Caistor, in Norfolk. For the maintenance of these lights and buoys the Trinity House has power to levy dues, regulated by Act of Parliament, from ships entering the ports. The affairs of the Trinity House are managed by a Court composed of the Master, four Wardens, eight Assistants, and eighteen Elder Brethren, making in all thirty-one. Of these Elder Brethren, a portion are men brought up to the Maritime Service, the remainder being persons of distinction, members of the Royal Family, Ministers of State, and naval officers of high rank. The Master's position is to a great extent honorary, the official duties of the Corporation being presided over by the Master's Deputy, who is annually elected from among the Elder Brethren.

COMMISSIONS.

A number of Commissions have been constituted from time to time by Acts of Parliament for the purpose of carrying out the intention of the Legislature, or by Order in Council for administering matters which can be best dealt with in this way.

Among the latter are the Civil Service Commissioners, who examine all candidates for junior positions in the Civil Service, and who grant certificates of competency to such as satisfy these requirements. The Commissioners are two in number, and they act under an Order in Council made in 1855, which prescribes the rules by which they shall conduct their examinations.

The Commissioners for the reduction of the National Debt, consisting of the Chancellor of the Exchequer, the Lord Chief Baron of the Court of Exchequer, the Master of the Rolls, the Speaker of the House of Commons, the Governor and Deputy Governor of the Bank of England, and the Accountant-General of the Court of Chancery, whose duty it

is to keep account of all money paid into the Court by suitors, are represented by the Comptroller-General, who transacts the business of the Department.

The collections of Excise Duties on articles manufactured in this country, the issue of postage, receipt, or legal stamps, and the collections of ordinary taxes is managed by the Board of Inland Revenue, who act under the Chancellor of the Exchequer. It consists of a Chairman and Deputy Chairman, and four Commissioners, and sits at Somerset House. This Board controls all the collectors of taxes throughout the country, and prosecutes in cases where persons attempt to evade payment.

The Board of Customs consists of six Commissioners, who, assisted by a large staff of clerks, manage the receipt of duties on exports and imports, and the payment of drawbacks, in cases where the duty has to be returned. Every seaport has its Custom House, but the Chief Commissioners sit at the Custom House near the Tower of London.

The Commissioners of Woods and Forests manage the Royal forests and woodlands and other Crown property, as distinguished from Royal palaces and public buildings, which are under the First Commissioner of Works, a political officer. They are subject to the Lords of the Treasury, to whom they have to submit proposals to sell or purchase land.

The Charity Commissioners are appointed by statute passed in 1853. They have power to permit property held by charities to be used in a way different from that originally designed by those who established the charity. They could, for instance, allow persons holding money, in trust, to provide pensions for certain persons, to build a hospital with that money, or endow a school.

The Endowed School Commissioners, also acting under statute, have power to alter the constitution of endowed schools within certain limits, and to vary the application of the endowment possessed by such schools in a manner different from that designed by their founders. But the proposals of these Commissioners must lie upon the table of the Houses of Parliament for a given time before they can come into operation, and if objected to by either House, they cannot have the force of law.

There is also an Ecclesiastical Commission which is empowered to manage certain property belonging to the Church of England, and to re-adjust the incomes of those holding offices in the Church. The chief dignitaries of the State are included in the Commission, but the business is chiefly managed by two paid Commissioners.

The Copyhold, Enclosure and Tithe Commission, consists of three Commissioners, with power to appoint assistants. They are empowered by Act of Parliament to authorise the enclosures of waste land beyond a certain distance of a city or town, and to lend money for the drainage

and improvement of land. Each year they make a report of their decisions to the Home Secretary, who lays it before Parliament, in accordance with a provision in the statute. These Commissioners are paid, and cannot sit in Parliament.

CHAPTER XIII.—CONVOCAATION.

CONVOCAATION is the assembly of the Representative Clergy of the Established Church of England. There is a separate Convocation for each Province: that for the Province of Canterbury consists of two Houses, that for York of only one. The Upper House of Convocation of the Province of Canterbury is composed of the Archbishops and Bishops, and the Lower House, of the Deans, the Archdeacons and one Proctor for every Cathedral Chapter, together with two of the clergy returned by their fellows from every diocese, who are also called Proctors. Convocation is summoned by the Sovereign's writ, and is called together by Royal Proclamation each year soon after the assembling of Parliament. Formerly it took part in the making of laws for the regulation of Ecclesiastical matters under special licence from the Sovereign, but it now only deliberates and recommends.

The voting in Convocation is conducted and recorded by a prolocutor, elected for the purpose; and in the Convocation of the Province of Canterbury the prolocutor is the means of communication between the Upper and Lower House.

CHAPTER XIV.—LOCAL ADMINISTRATION.

In the preceding chapters we have dealt only with the Imperial administration of the law. In this chapter we purpose reviewing the machinery by which the local affairs of the country are administered.

In the term "Local Governing Bodies" we include all those entrusted with the management of affairs within a limited area; they are very numerous, but the chief of them may be classified under four heads: the Corporations of cities and boroughs; the Commissioners entrusted with the management of affairs in unincorporated towns; the Justices of the Peace, who are similarly authorised in respect of the counties; and the Boards of Guardians and Overseers of the poor, who administer the Poor Law.

THE CITY OF LONDON.

The City of London proper, which does not include the whole of the metropolis, but only such portions of it as were formerly within the City walls, is governed in a manner altogether peculiar to itself. It has numerous charters, conferring upon it privileges in return for signal service done to the State, or in expectation of gaining the goodwill of

the citizens. London was prosperous before the time of William I.; the citizens were free men, and enjoyed "all the legal rights and privileges which in that age distinguished men of the first rank;" they were also "governed by their own Magistrates, and amenable only to their own Courts." The Conqueror, anxious to conciliate so powerful a body, lost no time in gaining the citizens to his side; and we read of his granting them a charter, which is still kept among the City Archives in the Guildhall. It consists of a small slip of parchment declaring that the citizens should be held "law worthy as they were in King Edward's days," which, according to high authority, meant that they should be deemed worthy to enjoy all the privileges their laws and customs conferred upon them. His successors gave fresh charters from time to time; King John gave no less than five; and although attempts have been made to cancel them the citizens have always stoutly resisted, and generally succeeded in retaining their privileges, so that the Government of the City is founded in the present day upon precisely the same leading principles as characterised it in the days of King Alfred.

The governing body of the City is described as the Lord Mayor, Aldermen, and Commons of the City of London in Common Council assembled. There are twenty Aldermen including the Lord Mayor, or one for each ward, and 240 Common-Councilmen, making 266 in all. Aldermen are elected for life, and are by virtue of their office City Magistrates. Only freemen of the City who pay rates to the amount of thirty shillings per annum take part in their election, which must be held within fourteen days after a vacancy has occurred. A person elected to the office of Alderman is liable to a fine of £500, if he refuse to serve, but he is excused on his declaring that he is not worth £30,000. Aldermen sit as Justices at the Mansion House with the Lord Mayor, and at Guildhall.

The freemen of each of the twenty-six wards also elect representatives from among their number at periodical ward-motes or ward meetings to serve in the Common Council. The number returned by each ward, which are in some cases divided into precincts for election purposes, varies from 4 to 17, but the number does not now correspond with the wealth or population of the ward. A freeman elected Common Councilman would be subject to fine and disfranchisement if he refused to serve, but as the distinction is much coveted few decline it.

The Lord Mayor of London is elected on the 29th of September in each year from among the Aldermen who have served the office of Sheriff. Two Aldermen are selected by the liverymen of the City—members of one of the City Guilds who are freemen—assembled in Common Hall, and submitted to the Court of Aldermen. The senior of the two is usually selected for the office. If he should refuse to serve he must pay a fine of £1000. Having been elected, he is presented to the Lord Chancellor,

who, in behalf of the Sovereign, signifies the Crown's approval of the choice made by the freemen. On the 9th of November following, the day upon which he enters upon his year of office, he goes in state to Westminster, and is presented by the Recorder to the Barons of the Exchequer, who receive him in their full robes of office, and require from him certain formal undertakings respecting the levying of dues in the City. The Queen's Remembrancer is present on these occasions, and conducts the proceedings. The emoluments of the office of Lord Mayor approach £8,000, but the holder of the office, on account of his sumptuous hospitality, usually spends at least half as much more during his year of office.

The duties of the Lord Mayor are numerous. Besides sitting daily at the Mansion House as Chief Magistrate of the City, he presides over the Courts of Aldermen, Common Council, and Common Hall; he is First Commissioner of the Central Criminal Court, and presides at the Southwark Sessions; he usually presides also at all meetings in the City, and sits as Judge at the Court of Hustings, and other Courts peculiar to the City. On the demise of the Crown he is summoned to the Privy Council, which declares allegiance to the new Sovereign; at the coronation he acts as chief butler, and receives for his fee a gold cup.

To constitute a Court of Common Council there must be not less than forty members present, including, at least, two Aldermen and the Lord Mayor. The Court has unlimited power of applying the revenues of the City, and full legislative authority in all municipal matters, as long as it does not run counter to any Act of Parliament.

The City Chamberlain, who is also elected to the office, acts as the banker of the Corporation and administers its funds.

The two Sheriffs are also elected by the freemen, and are bound to serve, if they have not done so already, on pain of a fine of £400 and 40 marks. The election is held on Midsummer Day. The Sheriffs always attend the Lord Mayor on State occasions, and at every Court of Aldermen; they are the returning officers for the City, and present the petitions of the Corporation to the House of Commons at the bar in person. They see to the execution of the law within the City, and control the City prisons.

Not only are the Justices of the City elected by the freemen, but all the chief officers of justice are appointed, either by the freemen themselves, or their representatives in Common Council assembled. As we have already stated, the Recorder is appointed for life by the Court of Aldermen, subject only to the approval of the Lord Chancellor, in behalf of the Crown. Besides presiding in the City Courts, the Recorder represents the City, when heard by counsel before either House of Parliament. He also furnishes a report to the Privy Council of all

persons convicted of capital crimes at the Central Criminal Court, and afterwards attends to take the pleasure of the Crown upon the matters in question. He thereafter makes out the warrants for the execution or reprieve of the criminals.

The Common Serjeant, the Judge of the Sheriff's Court, and Secondaries or Deputies of that Judge, are elected by the Common Council; indeed, no one administers the law in the City of London but those elected by the freemen, or by their representatives, except such of the Judges of the superior Courts as may attend each session of the Central Criminal Court to try the more serious cases. This is a privilege possessed by no other city or borough in the kingdom.

The control of the police, the keeping of the highways, the lighting of the City, its improvement, its bridges, and its markets, are all controlled by the Court of Common Council, who also administer its property, and impose such rates and taxes as are necessary.

The City of London is also divided into ninety-eight parishes, which form the City of London Union, and these parishes elect one hundred and one guardians of the poor.

THE METROPOLIS.

The affairs of the suburbs of the City, in respect of lighting, paving, building, and draining are administered by vestries, elected by the ratepayers of each parish. The number of these vestrymen varies according to the size of the parish; a certain proportion of them retire each year, but are eligible for re-election. They are elected by the ratepayers, and to facilitate their election the parishes are divided into wards under the Metropolis Local Management Act.

The Metropolitan Board of Works was established for the purpose of carrying on works in which more than one parish is concerned. This Board is composed of representatives from the several vestries, and from the City of London; it superintends the drainage of the entire metropolis, and carries out the larger works for its improvement, or else assists by contributions towards works undertaken by local vestries.

Each of the metropolitan parishes also elect their own guardians of the poor by a perfectly distinct process; but the money for the maintenance of the poor, and the sums required by the Metropolitan Board of Works, as well as the monies expended by the vestries themselves, and by the London School Board, are all raised by the vestries. Each of these bodies make known, at stated times, the amount required by them, and the vestry makes a single demand for the whole.

Guardians of the poor are elected by means of voting papers, which are left at the houses of the ratepayers by the police, and are afterwards collected by them. Vestrymen are elected at a ward meeting, called

in accordance with the provisions of the Metropolis Management Act ; and those who desire to take part in the election must attend the meeting of the ward, and, if a poll be demanded, must attend at the polling booth and give their votes in person.

The police of the metropolis is managed by a separate Commission, having a chief office in Scotland Yard.

PROVINCIAL CORPORATIONS.

Numerous other cities and towns throughout the kingdom have required the dignity of incorporation by Royal Charter, and some of them retain peculiar privileges under those charters to this day. Others have become incorporated, upon the petition of the ratepayers, under the provisions of an Act of Parliament, passed in the year 1835.

The Corporations of provincial towns consist of the Mayor, the Aldermen, and Councillors. One-third of the last who have been longest in office retire annually, but are eligible for re-election. The Councillors elect one-third of their number to be Aldermen during their term of office, and one-half of these Aldermen who have been longest in office retire every three years. The Mayors are elected by the Councillors annually from the whole body. Generally speaking, these bodies appoint and control the local police, appoint the municipal officers, and see to the lighting, paving, and draining of the town. They have powers to make bye-laws, subject to the approval of a Minister of State, for the suppression of nuisances, and to do all things necessary for the public health. They have control of the borough funds, and may apply surpluses to local improvements. Public libraries and museums are usually placed under the control of the Town Councils.

OTHER LOCAL AUTHORITIES.

Towns which are not incorporated are governed in respect of the matters referred to above by Commissioners elected by the ratepayers. The powers of these Commissioners are not as extensive as those possessed by Corporations, and an order made by them is of none effect if the majority of the ratepayers present a remonstrance against it.

In the counties, the Justices of the Peace appoint and control the county police, maintain the prisons, prosecute supposed offenders, and in most cases keep the highways in repair. The custom by which the Justices, who are appointed by the Crown, levy rates and expend the revenue so raised, forms the single exception to the Constitutional rule that taxation should go hand in hand with representation. The ratepayers have the opportunity of appealing to the Quarter Sessions against errors and inequalities of rating, but have no control over the management and expedition of the county funds. They have the satisfaction of

knowing however that the County Justices are all of them largely interested in the matter.

Other local bodies are constituted from time to time by special Acts of Parliament for the administration of special matters, such as Harbour Commissioners, who, having constructed a harbour, are empowered by statute to levy dues to make good the expenditure.

GREENWICH ROYAL NAVAL SCHOOLS.

THESE schools were formed by an amalgamation of the old Greenwich School, which appears to have been created originally in consonance with the Royal Charter of 1694, which contemplated the maintenance and education of the children of seamen slain in action, and which does not appear to have come into force until 1712, some 18 years afterwards.

At a general Court of Commissioners for Greenwich Hospital, held in that year, it was resolved that as soon as the revenue of the hospital should be sufficient for that purpose, the Corporation be at liberty to take in a number of children not exceeding 100 on the whole at any one time, and that no child be taken in before the age of 14, nor kept in after the age of 18: and that during their continuance in the hospital, they be instructed in writing, arithmetic, and navigation.

In 1821, 109 years after this school had been in existence (it then contained 200 boys), it was amalgamated with the Royal Naval Asylum, which had been founded in 1798, and was styled the Upper School, the Royal Naval Asylum being styled the Lower School. At this time the Royal Naval Asylum (or, as it was then termed, the Lower School), consisted of 680 boys and 200 girls—total, 1,080. In 1828, on the proposition of the Lord High Admiral, the number of boys in the Lower School was reduced from 600 to 400, and the number in the Upper School was increased from 200 to 400, the 200 so added being selected from the sons of commissioned officers.

In 1841 the school for girls was abolished, and it was at first intended to add 200 boys in their stead, but the proposed addition was altered to 100 boys, and at last abandoned altogether. For, although the funds of this great national establishment since that time have always been (and still are) sufficient for the education of the 200 additional boys, no steps have yet been taken to bring the school up to its original number of 1841—viz., of 1,000. It is to be hoped the Lords of the Admiralty may, if they find that they can, bring up the number to its original standard,

more especially as at the present time there are more candidates than there are vacancies : and as at the present time, above all others, there is alleged to be a want of skilled A.B.'s in our Mercantile Marine. We believe that much real good would be done by this means, if found to be practicable, both for the Mercantile Marine, Royal Naval Reserve, and Royal Navy.

From time to time various changes have taken place in the curriculum of education at this school, and several committees have examined into the state of the school. This is, however, a matter for Lord Camperdown and his Committee. In 1870 the character of the school was completely changed ; in August of that year the present system was inaugurated, the industrial training being introduced, and the boys being worked on what is termed the half-time system, that is, the boys who were at school in the forenoon being employed at a trade in the afternoon, and *vice versa*.

The educational staff at that time being greatly reduced, the distinction of Upper and Lower School abolished, the number still remaining at 800, the boys were divided into two divisions, the general and selected division, the former consisting of 80 boys, and the latter of 720.

The boys pass now from the general into the selected division as a portion of them formerly did from the Lower into the Upper School by competition, at the age of 13 from the general division ; at 14 years of age they are given their choice of becoming an engineer student, ship's steward boy, pupil teacher, and eventually a naval schoolmaster or a writer. Should they decline the one or other, they are discharged from the school, but should they make a selection, they are trained for the particular situation they select, and retained in the school until the age of $15\frac{1}{2}$, when they are sent to a naval dockyard, or one of H.M. ships, or retained in the school, as the case may be, that a vacancy should occur for them. The boys of the general division, at 13 years of age, who have failed to pass into the selected division, are called upon to say whether they will join the Navy to serve as a boy and man for $13\frac{1}{2}$ years from the age of $14\frac{1}{2}$. Should they refuse they are discharged the school, and their vacancies are filled up by boys willing to enter into this agreement, and, medically fit ; their parents or guardians being called upon to sign an engagement for the purpose ; but should they consent to join the Navy, they are medically examined, if unfit, they are discharged, but if found fit, they are placed in the seamanship class, and retained in the school until they are $14\frac{1}{2}$, when they are sent to a naval training ship, being again subjected to a medical examination.

The school has now been working on its present system for two years ; the trades taught are those of carpenter, painter, baker, plumber, engine-

fitter, blacksmith, tailor, shoemaker, musician, cook. The age for admission is from 10 to $10\frac{1}{4}$, and again from 13 to $13\frac{1}{4}$, the latter ages to fill the vacancies of the boys unwilling to join the Navy, or have been found medically unfit and discharged.

Boys admitted at 10 or $10\frac{1}{4}$ are allowed to select one of the above trades, at which he works until he succeeds to pass into the selected division, or joins the seamanship class at 13. Boys who join at 13 years of age go at once into the seamanship class, and are employed at no trade, with the exception of tailor, at which they go in rotation with all the other boys of the school to learn to mend their own clothes.

The Committee of 1870 advised a captain or commander in the Navy should be appointed as principal and superintendent, in lieu of the clergyman who was then at the head of the school, for the purpose of carrying out the reorganisation.

The present superintendent, who had had considerable experience in the training service of the Navy, was, we have heard, nominated by Lord Camperdown and Sir Sydney Dacres, and their selection has proved to be in every way judicious. The establishment has, during the last two years, undergone a complete change, and now stands as it should do, the *first* of any establishment of a similar character in the country. Formerly the boys attended school both forenoon and afternoon, worked at no trade, nor did they in any way lend a hand to keep the place clean. They were educated far above the station they were intended to fill (a fault common in most training ships); were allowed to contract habits of indolence when out of school, were untidy and slovenly in their persons, and disrespectful in their manners to their superiors; few of these boys ever found their way into the Navy, because their training at the school unfitted them for entering the Navy as boys, and created ideas that could never be realised, therefore they sought other employment on shore as clerks, &c. (the lowest and shabby-genteelest of all manly occupations), and in most cases failed either to be useful to the country or to themselves. Now the case is different; they do all the work of the establishment, such as keeping their dormitories, lavatories, mess-room, class-room clean, wash a large portion of their own clothes; up to 13 they are taught any trade they select, and are after that age trained to serve in the Navy in some position or other, of course, in a large measure depending upon their own abilities. The round pegs get into the round holes, and the square ones into square holes; in fact, they are as pre-eminently so-called good folk would express it, fitted for that position in life in which it has pleased God to place them. This is right from a common-sense point of view, whilst it is comforting from the other point of view.

It is not merely sufficient to say that the school under the new *régime*

has been a success, for it has succeeded far beyond the expectations of its most sanguine promoters. A visit to the school, such as we have recently paid, is sufficient to prove to any one who ever entertained a doubt as to the ultimate success of the present system, that its success is now established above a doubt. The trades work is most thoroughly established, and we are informed that the strangest thing of all is, that, although the boys only now get half the (so-called) schooling they formerly did, still they have not suffered in their scholastic attainments. From 180 to 180, we are told, will now join the Navy yearly, and from the excellent training they receive here will eventually become some of the finest and most intelligent men of our fleets.

The cost of the boys now compared with the cost before the reorganisation is, we are told, five pounds a year less, being now only 25 pounds a head.

The training the boys receive here for the Navy is very complete, and when drafted into a naval training ship they generally take a very high stand; in fact, there is no excuse for their not doing so, for they have every advantage at Greenwich; there are large and spacious seamanship class-rooms, fitted with large-sized models to illustrate everything that is taught. We wish our friends at the outports would condescend to visit the schools and look at the models. It is quite impossible for a boy to misunderstand what is taught. In fact, the dullest boy must in time become quite *au fait* with the rudiments and ground work of a seaman's duty. A boy after leaving Greenwich School only requires practice to make him a valuable seaman for Her Majesty's Navy. One room is set apart for instruction in sailmaking. Here each boy in the seamanship division in rotation receives instruction; they make all their own haversacks, bags, and sails for the models; 8 boys are also being trained as sailmakers. Another room is used entirely for instruction in the compass; this instruction is divided into four parts to correspond with the seamanship instruction; everything to enlighten a boy in this intricate part of a seaman's duty is done, in fact, no instruction could possibly be carried out in a more complete and thorough way than the compass instruction is in this establishment. Instructors at the outports cannot believe the efficiency of the system adopted in this branch.

The beginners in charge of a monitor boy are divided into classes to commence from the first step—viz., to learn to repeat the compass; another class in charge of another monitor boy stands round a small moveable table with a compass placed upon it, and as the boy in charge of the class moves the table round, the boys take it in turn to tell how the ship's head is; this process is repeated until every boy in the class is able (by looking at the compass) to tell how the ship's head is. The more advanced class is assembled round a large size round table, on

which is placed a model of a ship with a compass in the centre of the deck, by moving the steering wheel of this model she revolves round the table. She has a moveable yard to indicate the direction of the wind ; here the compass instructor himself takes up his position ; all the boys of the class in turn take the wheel and work the ship under the direction of the instructor, tacking, wearing, keeping her away, and bringing her to the wind, &c., &c., being constantly cross-questioned as to the direction of the wind, how the ship's head is, how ships reported on the different bows, quarters, and beams would bear, in fact, when a boy passes out of this instruction he is a perfect master of the compass, thoroughly understanding the meaning of variation and deviation, &c., &c. Another table is used for the instruction of the rule of the road at sea, how to report a ship by the light she exhibits—for this purpose a moveable model of a ship is placed in the centre of the table with a number of smaller models round her, the centre model is moved in all directions, and the boys, being instructed, are supposed to be on the look-out at sea, and know how their own ship (which is the centre model) is standing. They are required to tell how each of the smaller models would be standing by being able to see their lights only ; by this means a most complete insight how to report a ship at sea is learnt by the boys.

The seventh and last room in the seamanship department is probably the most important one of the whole ; *here is a large full-rigged ship, which revolves round at the command of the wheel.* This ship is manned by about a dozen boys actually on board of her, and regularly worked the same as a ship at sea—tacking, wearing, and manœuvring in every possible manner, the yards are regularly worked, in short, everything is properly done as if the manœuvre was being performed at sea ; by this means the boys learn (as far as they can) the mode of tacking and wearing a ship, the effect of the wind on the sails, and the sails on the ship. A large class is formed round the room, each evolution is performed first slowly, and each thing thoroughly explained to the boys ; then it is done smartly the same as if actually working a ship at sea. After each evolution the boys are examined ; by this means a boy is taught the principle of working a ship, and in all probability he knows more about it than boys who have been some time at sea, and who have never had the principle explained to them. This model is the invention of Captain Burney, R.N., the superintendent. To see a youngster in the room with a bo'sn's whistle doing the grand and giving orders to the other youngsters aboard, and doing it all in a commanding matter-of-fact way, is a pleasant sight. “ That boy will be a petty officer before he's afloat long,” remarked a captain of the Royal Navy, who was with us, “ and we hope he will, for the benefit of his employers and the men under him.” Six twelve-oared cutters, two sailing cutters, and two

light gigs are attached to the establishment to teach the boys to pull an oar, and manage a boat under canvas ; there is also now being built on the grounds a ship for exercising the boys aloft, and instructing them in the mode of reefing, furling, and shifting sails, which will do away with the necessity of sending them to a naval training ship at all ; they will now be qualified to go direct to a sea-going man-of-war. It has all the advantages of a ship moored in the river, and none of the disadvantages. There is an admirable parade ground, which enables the boys to be kept up in the highest state of proficiency in battalion drill. In June, 1870, when they competed at the Crystal Palace for the drill prize offered by the Society of Arts, they were most thoroughly beaten by the boys of the Duke of York's School. Now their drill is perfect, so much so that for the last two years, they have won the drill prize offered by the Society of Arts.

The boys are boys of the right stamp ; they do not shuffle about when a question is asked, but look straight into your face. They are extremely healthy. *The entire work of the establishment is done by them*, under the supervision of petty officer boys. This system is found to work admirably, and to instil into boys a feeling of self-reliance that must hereafter prove most beneficial to them when they become seamen in the Mercantile Marine or in Her Majesty's service.

Having visited this school, having also visited some of the Royal Navy training ships, and some of the training and reformatory ships in our ports, we have a word of advice to give to the committees and officers of the last. We hope that what we say will be accepted in the spirit in which it is given. We say to the Committees of Management that the very best thing they can do, as they wish their work to prosper, is to instruct the Commanding Officer and the Head Schoolmaster of each ship to pay a long visit to Greenwich School ; and to the officers of those ships we say, that they ought not to rest contented until they have made a careful round of that school. They can, on their mercantile training ships, perhaps, never equal the school in completeness, but they can, at any rate, imitate it in the most essential points. We may mention a pleasing incident that afforded an opportunity for the boys in the school to try their hands at something other than seamanship. Sir John Bennett offered a prize, a silver Lever watch, a good one too, to the boy in the school who would write the best essay on the life and duties of a sailor. The essay that won the prize was delivered in three days, was done in the school at odd times, and without any assistance from books or masters. There were thirty-six competitors. The essays are, of course, of the schoolboy class, and bear evidence of faith, hope, and charity, rather than of experience. They are, nevertheless, good in their way, and many a well-to-do parent, whose son's education costs no end

of a sum per annum, would be proud if his boy, with all his tutors and advantages, could do half as well with four years' schooling, more than half of which is devoted to practical work. We reproduce two essays, one signed "The Blue Bells of Scotland," and the other, "Death or Victory." Charles John Bosworthick entered the Royal Naval School at Greenwich, at about eleven years of age, and could then just read and write. When he was fifteen years of age, that is about two months ago, he wrote his essay, under the motto, "The Blue Bells of Scotland." Many of the essays were very good, but this was decidedly the best. The second one, signed "Death or Victory," was written by Thomas Saunders. Bosworthick is now about to be apprenticed to Mr. Strang, shipowner of London, an old supporter of the *Nautical Magazine*. We shall hear of Bosworthick again, as he will in time certainly become an officer of the Mercantile Marine, and, if he turns out as we think he will, a contributor.

NO. 1.—A SAILOR'S LIFE AND DUTIES.

"THE BLUE BELLS OF SCOTLAND."

A SAILOR'S is a stirring, adventurous life, just fitted for some restless mortal. It is also a hard one. A sailor is exposed to all sorts of weather and all climates. He must do his duty without any murmuring or repining, however hard his lot may be. He must obey any order, although it may lead to death. By a sailor's exposure to danger he becomes cool and collected when those qualities are essential to the success of the enterprise. In the tempest the sailor must go aloft, although the wind, howling through the cordage, makes the masts bend like reeds, and the ascent is fraught with danger to life and limb. The sailor sees Death in his most terrible form, but fears him not. He sees Death in the lightning darting its many tongues of fire around him as if to ensure his destruction. He sees Death in the bubbling and boiling waters around him which dash themselves on the little vessel which is his protection from their fury. Death rides on the crests of the giant billows which threaten to crush the sailor and his protecting vessel together. Thus a sailor's life is full of danger. Often he has to lash himself to the mast to resist the force of the cutting wind and waves combined, from sweeping him away to destruction. In all these dangers, however, the sailor puts his faith in the "sweet little cherub that sits up aloft," and if he escapes these perils he perhaps mutters a prayer for his safety, and then forgets the perils in which he stood. But a sailor's life is not always thus. Sometimes, for several days together, he does nothing but "whistle for the wind," tells yarns with some other bold Triton, or, perhaps, leans over the bulwarks and peers into the blue waters below, as if he would fathom its depths with his gaze and behold the star-spangled and jewel-adorned grottoes

below, where the mermaids hold their revels and where the sportive dolphin seeks his prey. Perhaps, however, it is of his childhood he dreams—of the time when he roamed by the side of the heaving ocean, and when it was the height of his boyish pride to be a sailor, so that he might see the beautiful lands far away. But a breeze soon dispels visions like these; he must not dream his time away when work is to be done, but take his share in the general duties. What changes of climate he suffers. To-day, perhaps, he may be near the Equator with its great heat. The heat is so much that the pitch runs from the seams of the vessel, the tar from the rigging, and life becomes almost unendurable. In a few days' time, he may be near the sterile and desolate north, with its icebergs and snow, and where his numbed fingers refuse to bend the frozen sails. What beautiful countries he sees, what beautiful birds, and beautiful lands where all nature puts on a gorgeous robe of green and gold, but also where fever rides on the air, and pestilence lurks in the swamp. As he passes the beautiful coral islands, which are studded over the face of the blue waters like stars in the sky, I am sure that he thinks of the goodness and greatness of that God who protects him in his peril. I am sure he agrees with the Psalmist in that "They that go down to the sea in ships: that do business in the great waters," "These see the mighty works of the Lord and his wonders in the deep." For who can look on the ocean without awe. A sailor is exposed to a thousand dangers—by fire, by wreck, by sickness, by famine, and last, but not least, thirst that racks his body with pain. There is water all around him, but that only adds to his pain, for he cannot drink it, and the fiery sun makes it seem to be a sea of molten lead. But he bears these privations with the greatest fortitude, and does not murmur at his fate. He becomes like the waves, wild and free, and when he dies he is content that they should sing his requiem. Though death should threaten him in every way it has no terrors for him, because it is his constant associate. A sailor should, however, be very careful; for his own life, and not only his own life, but the lives of his messmates, may depend on the soundness of a rope, or the strength of a knot, which he himself has spliced or made. So a sailor should do everything well and as quickly as he can. When he is on the look-out he must be very careful to spy anything which may augur ill to himself, messmates, or ship. A sailor's love for his ship is natural. It is the same as a soldier's love for his horse. She carries him safe through all dangers. Who, that has not experienced it, can tell the joy with which a sailor sees his ship cleave the salt water like a racehorse when she is homeward bound, and he expresses his approval of her conduct in true Nautical parlance. At the thought of returning to his native country and his home, the sailor's step becomes lighter, his eye gleams brighter, and he becomes a new personage.

When on shore who so merry as sailors. Their mirth is heartfelt and catching, for they play tricks and take jokes with the greatest good humour. Who so generous as the sailor. After the battle is over he will aid friend and foe alike. At a tale of distress his eye will glisten, and he will freely give part of his hard-earned money to relieve the sufferer, and he will bid him "cheer up" although he himself turns away to hide the moisture in his eye. Ever ready to help a friend or a beaten foe, he is at once a good and generous man. Although the exposure to the weather and the exciting life he leads makes him rough and coarse in person it does not impair the natural goodness of his heart. He is a fit protector for his country. He serves her faithfully, and he serves her well. Well may England be proud, for they are a gallant race. It is the sailors who have made our country famous. All honour then to these men who are ready to devote themselves and their well-being to the good of the many. Pay them the honour due to them.

And now I must take leave of a sailor's life, its joys and its sorrows, its storms and sunshines.

No. 2.—LIFE AND DUTIES OF A SAILOR.

Motto—"DEATH OR VICTORY."

A SAILOR has a great many hardships and threats to endure, but if he is of a persevering nature, and if he is a steady, intelligent, young man, he will soon get on in the service. But, if on the contrary, he is a lazy, indolent, and dissipated young man, he will always be in trouble, and end at last by being dismissed with disgrace. He will never be able to rise to anything, after he has once fallen through indolence; no one will ever trust him. A sailor should at all times be careful of the acquaintances he makes, for a bad companion has often been the ruin of a man.

A sailor has two great duties, which he should never forget to perform.

1st. He should pray to God to help him in everything that he does, and ask him, morning and evening, to keep him in the path of duty.

2nd. Always be obedient to command, remembering that the chief art in learning to command, is first to learn to obey, and be ready to do anything that is desired of him, doing it with the best of his ability.

A sailor may be many years from home, and he will see many of his Maker's works on the deep, in such shapes and forms as people who live on land never dream of. He sees His anger in the storms, when the wind roars, and the waves are mountains high. His ship is tossed about from wave to wave. He expects every moment to feel her sinking beneath his feet; yet his courage does not forsake him. Prayers are offered up to the Almighty for the safety of all on board; and when the

storm ceases, how thankful are both officers and men for the bountiful mercies of their God. He also sees his goodness in the steady winds, which God sends to speed his ship to her destination.

When a sailor has been away on a foreign station for five or six years, his heart yearns for his native land and his friends; and when, at last, the captain receives orders for his ship to return to England, how jovial they all are at the prospect of returning home once more. Then commences the writing of letters to wives, mothers, and friends, with the news of their coming; and when, after being some two or three months at sea, they arrive in sight of Old England, they give three hearty good cheers, and let go the anchor. After all is made taut above and below, they land, and then comes the greeting of friends, the skaking of hands, and the joy of the little ones, as each runs to get the first kiss from their father.

Let us now take a view of him in another light—viz., in an engagement.

The "look-out" at the mast-head sights a suspicious-looking craft on the weather bow, or, perhaps, two or three enemies vessels to windward, as the case may be. The order is given to "Beat to quarters;" the drum beats, and each man hurries with a beating heart to his station, anxiously glancing at the distant ship, as she approaches; he offers up a silent prayer to God, and thinks for a moment of the dear ones at home, who, perhaps, he will never meet again upon earth. The ships speed on to the conflict, and as soon as they are within range of each other, the cannons boom, and the shots pour from all parts, carrying death wherever they go. They close. Our own jolly seamen give a British cheer and rush on to the enemy's decks, sweeping down all who dare stand before them. At length the battle is won. But, alas! how many have gone to their last resting-place! how many have left wives or mothers to mourn their loss! But they all have died in an honourable cause: in defence of their country. For, in the words of the great hero, Nelson,

England confessed that every man that day had done his duty.

When, after the war is over, and peace is made, they return home, and show the scars of the wounds they received, and a medal on their breasts, how proud they are of them. And why should they not be proud of them? They were honestly and honourably gained.

And now to conclude; when a man has served his time, and grown old and feeble, he may live at ease on a tolerable pension, and be happy and comfortable for the rest of his days, and ever respected and beloved by his countrymen.

OBSERVATIONS ON THE COMPASS DEVIATION FOUND IN THE
COMPOSITE-BUILT SAILING SHIP "DUKE OF EDINBURGH."

BY CAPTAIN EVANS, R.N., F.R.S.

THE paper on the deviation of the standard compass of the "composite" sailing ship *Duke of Edinburgh*, by Mr. Towson, published in the *Nautical Magazine* for last month, is so remarkable as bearing on the theory and applied practice of compass deviations and their compensation, that I beg the indulgence of space in your present number to offer a few comments on the more salient features which present themselves in it.

Coming from such a source, the greatest respect is due to this paper, both from Mr. Towson's long and well-known labours in this branch of magnetic science, and from his thorough mastery of the application of the principles in practice. It is with the respect due to this appreciation of Mr. Towson's labours that I approach the examination of the extraordinary anomalies pointed out by him as existing in this composite-built ship. I may now state that had a name less known been attached to the report in question, I should not have hesitated to pronounce the co-efficients of deviations and the recorded tables as verging on the impossible, and upon grounds which I consider myself bound, of course, to explain. Whether these grounds be correct or otherwise, their discussion will at least serve to clear up what I venture to consider as one of the most erratic cases of compass deviation that has yet presented itself either to the mathematician, the compass adjuster, or the navigator.

So far as I gather, the original table of deviations of the standard compass of the ship is not given by Mr. Towson, but the co-efficients representing these deviations are stated to be as follows:—

$A = + 8^\circ$, $B = 0$, $C = + 8^\circ 30'$, $D = + 2^\circ 30'$, $E = - 6^\circ 15'$, from which co-efficients two useful tables marked A and B in the paper were computed by Mr. Towson, and furnished to the captain of the ship: these tables are of course only correct in so far as the co-efficients are correct. We may accordingly pass by these tables, and deal alone with the co-efficients.

Of these, B, C, and D call for no special comment. The ship was built with her head east magnetic; B and C conform, therefore, exactly to what we may briefly call theory. D is precisely in its amount what might have been predicted from other examples of this type of ship. It is when we have to deal with the co-efficients A and E that the anomaly, it might be almost said mystery, begins.

It may here be premised—as would be also inferred from Mr. Towson's remarks—that an adopted principle by those who have heretofore investi-

gated the subject, is, that the values of A when the compass is placed in the middle line of the ship, and where the deviations have been observed with every care, are always so small that the values which appear in records may be considered rather as errors of adjustment (in the compass) and observation, than as *real* or *magnetic* values.

And, that the values of E when the ship is upright, and the compass in the midship line, give no certain indication of any real value. The more accurate the compass, and the more careful the observations, the smaller E generally is. In other words, subject to small values and changes of signs found in these two co-efficients when the ship is swung to the right, or to the left, as noticed by Mr. Towson, the co-efficients A and E may be considered as 0 or zero for a compass in the amidship line of the ship.

I have examined some thousands of deviation tables, or the resulting co-efficients of iron and wood-built ships, embracing not only the ships of the Royal Navy—which at the present time include about 40 composite-built ships—but also those of the Russian Imperial Navy, many of other foreign navies, and numerous ships of our own Mercantile Marine, all confirmatory of this general statement.

When, be it observed, the compass is moved out of the midship line in an iron ship (or, presumably, a composite one), sensible values for A, and notably for E, present themselves. As a question of magnitude, however, we are obliged to go to compasses placed so near the gun-turrets of our armour-plated turret ships of war as 4 or 5 feet, or in very confined localities in their between decks surrounded by iron within 3, 4, or 5 feet to find values at all approaching those recorded for the *Duke of Edinburgh*—for example,

In <i>Royal Sovereign</i> —turret ship, armour-plated	A	E
At a compass on starboard side of upper deck	1° 8'	9° 14'
Ditto do. lower deck	0 37	- 4 42
Ditto port do. do.	+ 6 42	+ 4 38
In <i>Cyclops</i> —iron and armour-plated		
At a compass on starboard side of lower deck	- 5 0	- 6 43
In <i>Hecate</i> —a sister vessel to <i>Cyclops</i> , and at a compass similarly placed	- 9 52	- 4 50

It is impossible to conceive worse positions for the compass to be placed in than the examples just cited. The necessities, however, of these war vessels demanded the adopted sites—and yet, magnetically considered, they are no worse than a, doubtless, designedly chosen position in the trading ship *Duke of Edinburgh*.

But another singular feature has to be noticed in all these cited examples, the signs of A and E go together—*i.e.*, in a compass on the starboard side of the midship line - A is associated with a - E, on the port side + A

with + E. Similar results are found when two compasses are placed, one on each side of the iron horizontal spindle of a centrally-placed steering wheel: for example, in H.M. troop-ship *Orontes*, where this reprehensible fitting of an iron spindle of large dimensions at one time existed,

	A	E
the starboard steering compass had	+ 0° 45'	+ 1° 33'
port do. do.	- 1 8	- 1 47

Now, strangely and unaccountably, in the *Duke of Edinburgh*, this heretofore, apparently symmetrical accompaniment of similar signs for A and E are changed, for the former has a + sign, the latter a - sign.

Having, in the course of my duties connected with the Admiralty Compass Department, made many experimental investigations as to the effect of soft iron acting on the compass, I have felt the difficulty of obtaining an A and E conjointly, by an arrangement of rods or masses; it is, perhaps, best effected by a simple bar, arranged like the spindle of a wheel, pointing to two needles, as in the usual arrangements of steering binnacles; here assuredly the + and - signs run together, and although I do not deem it impossible, still I think it highly improbable, that any arrangement of iron likely to exist in a ship can produce different signs for A and E at the one compass.

We are thus reduced to inquire how is it that in this ordinary built composite ship the grave compass errors of a + 8° A, and a - 6¼° E can exist, and if so, how are they produced? I am unable to afford the slightest clue to answer these questions with the data before me.

I am assured Mr. Towson will narrowly watch the career of this vessel, and perhaps on her return from the present voyage an exhaustive examination will be made. This is much to be desired, not only in the interests of navigation, but for the advancement of this branch of nautical science. The following points, however, now present themselves, information respecting which probably Mr. Towson would furnish to your readers.

1. The position and height of the compass from the iron beams or plating for deck; also its distance from neighbouring masses of iron.

2. In the process of swinging were all disturbing causes removed; (a) those near the compass in the ship; (b) or near the compass on shore (if one employed).

3. Was she swung in dock, and if so, were any iron or composite ships near, or moving at any time in the process of swinging.

4. Was the swinging for the original table of deviations obtained at one time, or divided over periods.

5. Were the deviations observed with the ship's head, by compass, or correct magnetic, and were the compass cards proved to be accurate beforehand.

6. Can the original table of deviations from which the co-efficients were deduced be given.

PILOTAGE.

With regard to the leading article in our October number on the subject of Pilotage, several of our subscribers have assumed that we therein advocated the principle of compulsory pilotage, and in support of such an assumption have quoted the last sentence in our article, which is as follows:—"For the present it seems to us that in respect of the compulsory employment of pilots, as much freedom exists as is expedient." We feel called upon, therefore, to ask those of our readers who are under such an impression to be so good as to read the context carefully, and they will see that the end we had in view was the ultimate throwing open of the Pilotage of the United Kingdom, and that we would accept any step in that direction as very desirable. But in consideration of the vested interests of pilots, the customs of navigation, and the present condition of trade and shipping, we were, and are still, of opinion that "it would be better to attain the desired object by evolution rather than by revolution." We would also call attention to the meaning of the word "pilot" as expressed in our article, and we doubt not that a re-consideration of our remarks will alter the opinion some of our readers' have formed.

HAMBURG.—THE COMMERCIAL EMPORIUM OF THE
CONTINENT.

The following returns, which we have extracted from the "Official Tables" published annually by the Statistical Department of Hamburg, show a large increase in the trade and shipping of that port for the year 1871, compared with the year 1870. It is to be observed, that in July, 1870, the war with France broke out, and in consequence, during the last six months of that year, trade was seriously affected. But the increase in 1871 shows a great advance, compared with 1869, the value of the imports of that year being £64,179,465; and of 1871, £90,486,598.

The only decrease in 1871, compared with 1870, is in the ships belonging to Hamburg owners. This is, of course, owing to the circumstance that Hamburg ships, which were captured by the French in 1870, had not been replaced in 1871. However, in the present year, 1872, even this decrease has fully disappeared. The great development

which since the conclusion of peace has taken place in all branches of trade in Germany, has given a new impulse to shipping companies; and new lines of steamers, both to transatlantic and European places, have consequently been established, and down to October, 1872, about twenty new steamers, with a tonnage of 18,000 tons, were registered at Hamburg.

The trade and shipping returns for the first six months of 1872, show so great an increase that there can be no doubt that the total amount of the imports of the year 1872 will outstrip the figures which we give for 1871 to a very large amount.

The State is endeavouring to keep pace with this steady increase in trade and shipping. The depth of the navigable channel of the Elbe is to be increased, so as to allow larger vessels to reach the city; a new quay was opened in July, 1872. The present quay is about 8,000 feet long, with sheds covering a surface of about 510,000 square feet, and a further length of 6,000 feet will be opened in the course of next year. Large docks, both at Hamburg and at the outport of Cuxhaven, are projected, and new lines of railroads will facilitate the traffic to Germany. Hamburg, in her present flourishing state, is well able to sustain the competition with her rival ports, and to uphold her station as the commercial emporium on the Continent. Undoubtedly her prosperous and proud situation is owing to the free trade policy, which she has always adhered to. Hamburg and Bremen refused to enter the Zoll Verein in 1866, and by the Constitution of the German Empire these two cities have remained "free ports," and only on their demand and with their consent can they be obliged to join the Zoll Verein. It is not likely that, with such favourable results of her commercial prosperity, Hamburg will make use of her right to become a member of the German Customs' League.

The point for Great Britain to note in all friendliness is that the trade and shipping of Hamburg is increasing as rapidly as our own trade ever increased; and there is no doubt whatever that the Hamburg ships will, year after year, run a closer and closer race with British ships. A friendly rivalry will do no harm to either nation, but, on the contrary, will go far towards keeping the ships and crews of both up to the mark, and will be of benefit to the world generally. In the next session of our Parliament, when good-natured people may attempt to re-impose some old law, or to invent and impose new laws, as to the manning of British merchant ships, the ship owners, as a body, will doubtless, before giving their consent to any such proposal, carefully consider how far interference between themselves and the number, rating, and nationality of the seamen they are to employ, will hamper them in competition with foreign countries.

1.—TRADE ACCOUNTS.

(a)—IMPORTS—VALUE AND WEIGHT.

	1870.		1871.	
	Weight.	Value.	Weight.	Value.
	Cwt.	£	Cwt.	£
From Transatlantic places	3,971,886	5,405,860	7,774,072	9,846,850
„ Great Britain and Ireland ...	19,491,311	17,618,743	28,926,891	86,522,144
„ other European countries ...	5,782,507	7,184,882	7,018,474	10,018,894
„ Germany ...	23,631,946	25,287,110	24,471,884	34,103,705
	52,877,650	55,445,545	68,186,321	90,486,598

(b)—IMPORTS CLASSIFIED.

	Weight.	Value.	Weight.	Value.
	Cwt.	£	Cwt.	£
Raw Materials ...	86,350,678	21,103,926	48,332,101	80,838,944
Articles of Consumption	13,876,396	15,256,294	16,250,688	22,234,477
Articles of Manufacture and Art ...	2,049,349	5,890,382	2,688,855	9,047,441
Manufactured Goods	595,997	10,030,222	903,437	15,219,634
Bullion	5,235	8,164,721	11,240	13,146,097
	52,877,650	55,445,545	68,186,321	90,486,598

(c)—PRINCIPAL ARTICLES OF IMPORT.

	1870.		1871.	
		Value £		Value £
Coffee	2,730,300	...	4,063,200
Cotton	2,556,400	...	2,718,600
Corn	2,272,100	...	2,827,800
Woollen Yarn	2,256,200	...	3,138,700
Cotton Yarn	1,745,800	...	2,382,000
Sugar	1,609,700	...	3,480,600
Tobacco and Cigars	1,162,400	...	2,157,300
Wool	994,800	...	2,766,800
Linen Yarn	601,400	...	612,400
Coals	539,800	...	826,500
Petroleum	580,000	...	751,500
Iron	555,200	...	843,200
Tea	272,600	...	298,700
Manufactured Goods	9,886,100	...	15,041,400
		£27,762,800		£41,903,700
Other Articles	27,682,745	...	48,582,893
Total	£55,445,545	...	£90,486,598

2.—NAVIGATION ACCOUNT.
(a)—ARRIVALS.

1870.	Sailing Vessels.	Tonnage. Tons.	Crews.	Steamers.	Tonnage. Tons.	Crews.	Total Ships.	Tonnage. Tons.	Crews.
	From Transatlantic Places	424	4,596	54	120,812	5,220	478	322,194	9,816
	" Great Britain.....	521	3,527	1,561	1,086,894	31,484	2,082	1,208,811	36,011
	" other European Countries	1,250	5,488	884	159,798	5,881	1,584	322,047	11,814
	Total	2,195	18,606	1,949	1,367,004	42,585	4,144	1,858,052	56,141

Of which sailing vessels 514 with 145,546 tons and 8,829 crew } under the British flag.
 " " steamers 1,444 " 1,007,162 " 28,955 " }

1871.	Sailing Vessels.	Tonnage. Tons.	Crews.	Steamers.	Tonnage. Tons.	Crews.	Total Ships.	Tonnage. Tons.	Crews.
	From Transatlantic Places	728	409,778	71	168,468	7,058	794	578,241	15,674
	" Great Britain	682	151,100	1,898	1,359,406	38,329	2,525	1,510,506	42,614
	" other European Countries	1,626	202,810	494	225,116	8,046	2,120	427,926	14,908
	Total	2,981	763,688	2,468	1,752,990	53,428	5,489	2,516,678	73,196

Of which sailing vessels 772 with 258,409 tons and 6,246 crew } under the British flag.
 " " steamers 1,676 " 1,210,004 " " 88,610 " }

(b)—DEPARTURES.

1870.	Sailing Vessels.	Tonnage. Tons.	Crews.	Steamers.	Tonnage. Tons.	Crews.	Total Ships.	Tonnage. Tons.	Crews.
To Transatlantic Places	415	174,281	4,256	49	118,572	4,992	464	287,858	9,248
" Great Britain	617	176,544	4,640	1,698	1,071,486	81,161	2,155	1,248,090	85,801
" other European Countries ...	1,126	112,082	4,868	356	176,990	6,240	1,482	289,022	10,608
Total	2,158	462,857	13,259	1,943	1,862,048	42,998	4,101	1,824,905	55,652

Of which sailing vessels 502 with 195,572 tons and 8,656 crew } under the British flag.
 " " steamers 1,439 " 1,004,098 " " 28,894 " }

1871.	Sailing Vessels.	Tonnage. Tons.	Crews.	Steamers.	Tonnage. Tons.	Crews.	Total Ships.	Tonnage. Tons.	Crews.
To Transatlantic Places	598	270,878	6,354	71	165,890	7,009	669	436,268	18,368
" Great Britain.....	914	918,273	7,111	1,856	1,830,716	87,483	2,770	1,648,989	44,544
" other European Countries...	1,489	178,097	5,950	529	252,364	8,654	2,018	490,461	14,604
Total	3,001	766,748	19,415	2,456	1,748,970	58,096	5,457	2,515,718	72,511

Of which sailing vessels 757 with 252,951 tons and 6,124 crew } under the British flag.
 " " steamers 1,675 " 1,220,646 " " 98,649 " }

(c)—ARRIVALS OF SHIPS LADEN WITH COALS.

In 1870, 994 ships 572,982 tons, of which 725 steamers 494,406 tons.
 ,, 1871, 1,272 ,, 741,898 ,, ,, 918 ,, 687,542 ,,

(d)—STEAMERS WHICH DISCHARGED AND TOOK IN THEIR CARGOES AT THE SANDTHOR QUAY.

	Steamers.	Tonnage. Tons.	Of which English Steamers.	Tonnage. Tons.	Of which steamers from English ports.	Tonnage. Tons.	Crews.
1870	554	258,640	486	204,568	377	225,618	6,900
1871	620	304,460	486	219,528	519	258,780	6,500

(e)—SHIPS BELONGING TO HAMBURG OWNERS.

	Sailing vessels.	Tonnage.	Steamers.	Tonnage.	Total ships.	Tonnage.	Crews.
1870	402	202,728	87	48,266	489	245,994	6,900
1871	366	184,968	40	45,668	406	230,636	6,500

In 1871, 12,191 seamen were engaged for the service of 366 sailing vessels and 88 steamers before the Superintendent of the Mercantile Marine Office. Medical advice and attendance was given gratis to 357 seamen by the medical department of the Seamen's House.

The navigation was interrupted in the winter, 1869-70, during twenty-three days; in the winter, 1870-71, during sixty-one days, owing to the river being frozen.

3.—EMIGRATION.

				EMIGRANTS.	
				1870.	1871.
To the United States	...	...	...	24,874	81,625
„ British North America	...	...	...	97	...
„ Brazil and the South of America	...	...	...	1,162	1,254
„ Australia	...	...	...	1,259	1,901
„ Other countries	...	...	...	50	363
				27,442	85,148
Indirect <i>via</i> England	...	...	...	5,114	7,081
				82,556	42,224

4.—AMOUNT OF SEA INSURANCES.

	Amount of Capital. £	Average Premium. Per cent.
1870	69,445,500	1.18
1871	84,926,685	0.99

5.—ARRIVALS AND DEPARTURES OF RIVER BOATS.

(a)—ARRIVALS.

Year.	River Boats.	Of which Steamers.	Cargoes. Cwt.	Crews.
1870	4,530	627	5,968,987	18,831
1871	5,761	713	6,572,498	18,640

(b)—DEPARTURES.

1870	4,645	619	7,800,040	16,458
1871	5,785	686	11,147,630	20,208

GENERAL.

GUNS AND SHIPS.—Major Moncrieff states as follows:—"In the discussion which has lately taken place in the press on the question of armoured ships, I have, for one, urged the proposition which must soon appear to be a truism, if it is not already seen in that light—viz., that afloat the limit to armour is nearly reached, while the limit of the power of guns is not yet known. As there may be some doubt as to the nature of the proposals for meeting this state of things, which were advanced by me as far back as 1868, and in more complete form in 1869, I may shortly state them. I should not, however, wish it to be supposed that the conditions above-stated are not already recognised by our ablest naval architects. Mr. Reed, for instance, who was desirous when in office to give my system a trial in one of his ships, in his letter to the *Times* of the 7th inst., states, "My policy was not to carry immense weights of armour, spread over ships of preposterous size, but to contract the area of the armour while much increasing its thickness." Finding that ships could not protect high sides by armour, a low freeboard was early adopted; next a breastwork and turrets with low freeboard in different combinations. The nature of my proposal is more radical still; it is simply to dispense altogether with an armed side, except a belt below the

water line, and to place the armoured deck slightly elevated above that line, ending at the armour-plating forming the belt. Amidships is placed a strong iron fortress, carrying the guns, engines, and all machinery that requires to be above the level of the water, and of sufficient strength to resist the attack of heavy artillery. The rest of the ship is built up to the usual height in compartments, is slightly, and of ample strength, but light enough to allow projectiles to pass through it freely. By means of my pneumatic invention, the guns can be mounted so as to command end on, as well as cross fire. This new condition forms the basis of my proposals. When in action that part of the ship fore and aft of the central fortress may be pierced by the enemy's shot without injury to the crew, or without necessarily crippling the ship as long as the fighting portion remains intact; and after action the repairs can be made at leisure. When not in action—and this is nearly always—the space occupied by the unprotected parts of the hull affords ample room for the comfort and accommodation of the crew. The weights are disposed in the best position for sailing and manœuvring. The iron, or as much of it as is necessary, which in existing vessels is employed to cover the sides and to form the turrets, each of which weighs about 300 tons, can by this method be entirely confined to the only part which is armoured. These proposals are, I trust, sufficiently definite. When a wise general finds that his extended line is weakened so much that it can be forced at any point, he contracts it to limits which can be held against the enemy, though it may be at the sacrifice of what he might otherwise wish to maintain. It is the same necessity that confronts the naval architect. I only advocate that it should be met at once, and in the manner that may be considered most advantageous. If my method of treating the armament of our war vessels is on investigation found to be among those that promise a satisfactory solution of the difficulty, it will have the further merit of bringing back the external appearance of our ships more nearly to what they were when our seamanship gave us an advantage over other countries. It will once more give us cruisers for every sea that need not refuse the issue of battle even with the formidable but unseaworthy monsters that had their birth in America, and have since formed more or less models for other nations." In connection with this subject our old friend *Punch* aptly says :—

One gun that will pierce mind, is worth any number
 Which will *not*, and an ironclad vessel encumber ;
 Too small to be hit, with one gun, one gunboat
 May be more than a match for the best ship afloat.
 The smaller the boat and the bigger the gun,
 The more damage she'll do, and the less risk she'll run.
 In one little boat, hands, themselves very few,
 Might send to the bottom a big ship's whole crew.
 The lightest of boats, you must see, if you think,
 Outweighs any, the heaviest ship she can sink.

A NEW COAT.—Mr. Merriman, of New York, has invented a dress, destined ere long to be very fashionable with yachtsmen and masters of ships. It is utterly impervious to wet, and, unlike most waterproof dresses, keeps the wearer warm. The following cut is a representation of it.



It has been adopted largely in the United States, where all the lifeboat crews are provided with it, and the Board of Trade have already ordered it to be supplied to several of the rocket stations on the coasts of the United Kingdom. In this dress the men using the apparatus can, with impunity, go into heavy seas, to the rescue of shipwrecked persons. The following is a report of preliminary trials in England "So soon as Mr. Merriman appeared in North Shields, notice was issued of his intention to try his life-saving dress on Cullercoats or (Long Sands) Tynemouth, where we have a fine sandy beach, and the sea rolls heavily in a gale of wind. The day was everything we could desire, very cold, and a strong surf running. The Cullercoats brigade, it being Saturday, were all at liberty, and mustered strongly (Rev. Mr. Wheeler was from home). Mr.

Spence, of the Tynemouth brigade, met them, accompanied by Mr. Merriman, Captain Prowse, R.N., Captain Nicholetts, R.N., and as many gentlemen interested in life-saving and maritime pursuits as could be got together. Mr. Merriman put off his great coat, and in about two and a half minutes had equipped himself in his dress. He then walked into the breakers, and when about waist deep, threw himself into the waves, and went through a variety of evolutions, with the most perfect ease to himself. He seemed to have complete control over himself in the water. After half an hour he came out, took off the dress, and was as dry, warm, and comfortable inside, as any one could wish. We, on the shore, were all shivering; he had a fine warm glow all over him. He then went in again, in a smoother place, to show one or two more things. Word had been sent over to Mr. Malcolm, South Shields, and as it was their drill, there was no difficulty about getting them together at South Shields. As soon as Mr. Merriman was ready, Captain Prowse, Mr. Spence, and Miss Fayle, accompanied him over the water. A wreck has been lying there for many months, inside the South Pier; near that point Mr. Merriman took the water, and again showed those present how much he was at ease in a heavy surf. The whole of those present at Tynemouth, both the Tynemouth men and the Cullercoats fishermen, at South Shields, expressed themselves as very much pleased indeed with it. Captain Nicholetts, R.N., of *H.M.S. Castor*, and Captain Prowse, R.N., also say they never saw a dress to compare with it. The whole of the gentlemen present also expressed a similar opinion. Mr. Merriman having offered to stay till Monday to give any person so inclined an opportunity of trying the dress, we joined him at half-past six that morning, and took him to the extreme end of the North Pier, at Tynemouth, amongst the staging. Mr. Spence, of the Tynemouth brigade, was the first to go in. There was a fine rolling sea. Mr. Spence had not been into the sea to bathe for twenty years, but the moment he rolled over into the water, he was thoroughly at home. After tumbling about awhile, he came ashore. The swimming master, James Fry, then went in, and then Mr. Charles J. Spence, and also a gentleman of the name of Bramwell. The feeling, after having the dress on and being in the water is, that the wearer would have no fear of going into a heavy surf. It gives such an amount of confidence at once. There were also present five or six of the River Commissioners' most experienced divers, who also expressed their unqualified approval of it. Their expression was, that it beat all the dresses they had ever seen, and they see a great many. We all went in in our clothes, just as we were, and not one of us took in a drop of water. The committee of the Tynemouth, and Shields, and Cullercoats brigades have had meetings, and all think that it is a dress which might be invaluable in aiding to save life, and

suggest that it shall be made imperative for at least four of the members to practice with it at each monthly drill."

AUTOMATIC PUMPING AND VENTILATING APPARATUS.—The Admiral-Superintendent of the Dockyard, Admiral Sir W. King-Hall; the Chief of the Steam Reserve, Captain Fellowes, R.N.; the Master Shipwright, Mr. Moore; the Surveyor of Machinery, Mr. Bardin, and other officials; with General Roddey, of Alabama, representing the inventor; Dr. Row, of Devonport; and some representatives of the London Press, were present, recently, at some experiments made in the new steam despatch boat *Vigilant*, to test the merits of a system of self-pumping and ventilating, with which the Admiralty had ordered her to be fitted. The invention elicited the unqualified praise of the distinguished officials to whose judgment it has been submitted by the Admiralty. That automatic pumping and ventilating can be effected, was proved most conclusively. The audible emissions of foul air from the hold, and visible ejection of bilge water, left no room to doubt whether the promised results were being effected, and produced by the sole influence of the ship's own motion in the somewhat rough sea. The apparatus is simple in the extreme, is not liable to wear out, and unceasing in its action, unless the vessel is at absolute rest. The capability of maintaining a ship in a healthy condition, affects the well-being, not only of our maritime population, and their immediate associations, but of families, it may almost be said of communities, betaking themselves to emigrant ships. Even if battened down for days, impurity would be withdrawn as fast as generated, and the inside atmosphere and the outside air would be pure alike. The great desideratum, a constant permeation of pure air, in exchange for that contaminated, has not yet been acquired, and the invention now applied is the only one which promises effectually to supply it. The destructive effects of bilge water on cargoes, and on the iron plating and frame-work, independently of sanitary influences, render bilge water one of the most destructive agents incidentally associated with shipping, and that it can be entirely got rid of is now so well known in America, that small craft—fruiters, &c.—find it economical to remove the putrid and offensive compound from their vessels by the use of the apparatus referred to.

THE NEW STEAM LINE FROM CARDIFF TO NEW YORK.—The *Glamorgan* performed the passage to New York, on her first trip, in a most satisfactory manner. She started on the 13th October, from Penarth Roads, and reached her destination in exactly thirteen days. This was in spite of bad weather and head winds, and being a new vessel, the master was instructed not to press her. The *Scotia* sailed the day previous from Liverpool, and made the trip in eleven days. She is one of the quickest boats afloat.

HARBOUR ACCOMMODATION.—SWANSEA.—At this port there has been a considerable amount of agitation for months past, owing to the insufficient dock room to meet the increasing trade of the port. Various public meetings of shippers and others have been held. Great complaints have been loudly expressed of the inadequate facility afforded by the Great Western Railway Company, who monopolise the greater number of “tips” at the South Dock. The inaction of the Harbour Trust has also been severely commented on. At a meeting of shippers, held at Swansea, in September last, it was stated that a French vessel had waited there for a cargo for about twenty days, and then was obliged to sail in ballast. At another meeting, held on the 8th October, convened to meet Mr. Dillwyn, M.P. for the borough, and a director of the Great Western Railway Company, resolutions were passed, condemning the policy of that concern, and appointing a committee to confer with them and the Harbour Trustees. The result of all this agitation has been a resolution of the Harbour Trustees to apply to Parliament for powers to enlarge the accommodation of the port. It appears they have consulted Mr. Hawkshaw, C.E., and acting under his advice, it has been thought desirable to float the river, in conjunction with a half-tide basin, which is to be formed at Fabian’s Bay, situated to the east of the entrance to the harbour. This resolution was come to on the 28th October, there being only one dissentient to the course proposed. This will add greatly to the convenience of vessels frequenting the port. In the meantime the Railway Company have pledged themselves to spend £1,500 on new sidings, to be completed forthwith, at the present dock and harbour.

NEATH.—The Harbour Commissioners at this little place have been bestirring themselves to improve the harbour accommodation, in order to meet the increased traffic, which seems to be continually surging upwards at the South Welsh ports. At a meeting held on the 28th October last, it was resolved to apply for power to “float the harbour,” and the clerk and engineer were instructed to prepare the necessary plans and specifications to be deposited previous to application to Parliament next session.

LIFE SAVING ROCKETS.—REPORT OF SOME EXPERIMENTS.—Two Boxer life saving rockets were coupled together. The rockets were fired by means of quick match leaders.—*One Experiment:* Rockets placed on a trestle at an angle of 80°. Both rockets ignited simultaneously and flew very straight, with a low and very steady trajectory, taking out the whole line about 480 yards. Time of flight, 6·3 sec.—*Another Experiment:* Another pair of rockets coupled in the same manner, but instead of the rocket line a double whip and tail block was made fast to the bight and faked down on the beach. The rockets were fired

from a service tube at an angle of 35° , one rocket on top of the other. They did not ignite exactly simultaneously, but, nevertheless, flew very steadily, taking out the whole length of the double whip, about 240 yards, and then broke loose from the whip, the shore end having been secured to a picket.—*Another Experiment*: A similar pair, except that a copper wire rope was used instead of the lines leading from the heads of the rockets, was next fired from the stand. The whip with tail block, now heavy from being saturated with water, was made fast to a splice in the copper rope, and a rocket line bent on to the shore end of the whip. The rockets took out the whole whip, and forty fathoms of the rocket line. Time of flight, 8.1 sec. The whip and tail block were placed in the scale after this experiment, and were found to weigh 128 lbs., the weight when dry being 76 lbs.—*Another Experiment*: A service mortar and a block furnished by Mr. Rogers, at the cost of the Mercantile Marine Fund, carrying a service double whip line, gave 152 yards. This was the greatest range obtained out of several trials. The result of these experiments is as follows: 1. One rocket carrying a service double whip line, a block and a tail, beats the cone block and mortar by 34 yards. 2. Two rockets carrying the same, beat the cone block and mortar by 168 yards, and this when the line carried by the rockets is 52 lbs. heavier than the same line carried by the cone block from the mortar. 3. One rocket carrying the ordinary rocket line beats the cone block and mortar by 198 yards. 4. Two rockets carrying the ordinary rocket line beat the cone block and mortar by 328 yards. We must also mention that within our knowledge a crew has been landed in actual service from a wreck, when the ship was at a distance of 240 yards. So that the small range of the service mortar and cone block, so far as it has yet been tried by trustworthy authorities, has been proved to be not only inferior to the rocket apparatus, but to have so small a range as to be unable, in certain cases, to reach a wreck. A great deal has been said as to the difficulty of using the rocket apparatus at a wreck, its uncertainty in use, and the necessity for an artillery or seaman gunner to superintend it. As against misstatement and ignorance we might bring forward many facts. It will suffice to instance two cases. At Port Isaac, in Cornwall, where a company was formed of farm labourers, two tailors, a mason, a bricklayer's labourer, a merchant's son, and a publican, the very first time they tried the rockets at a wreck *they saved the whole crew with the first rocket*. Again, at Trevoze Head, at the wreck of the *Victoria*, one of the most plucky cases on record, Mr. Neate, with a company of farmers and labourers, saved the crew of seven men. The first rocket went over the ship, and she broke up as the last man landed. It may be asserted, without fear of contradiction, that the rocket apparatus never fails to effect a communication if the ship is within range.

EAST COAST OF AFRICA.—NEW STEAM LINE.—In our July number we discussed at length the advantages that would accrue to humanity by opening up the East Coast of Africa. We believe that this would alone do more than all so-called “missionary” efforts. We believe that steam and electricity are the greatest and best of missionaries. If the natives of the East Coast find that it is less difficult, and more profitable, to deal in ivory, gums, and spices, than in slaves, the slave trade that Dr. Livingstone now grieves over so much is doomed. That this may be looked on as certain, we are now able to announce, since the Union Steam-ship Company have made arrangements for the establishment of a mail packet service between the Cape, Natal, and Zanzibar; and the British India Company, in conjunction therewith, have undertaken the service from Zanzibar to Aden. The Eastern Coast of Africa will thus be in communication with England and India, and the establishment of this service will at once supplant the slave trade by legitimate commerce. The Union Steam-ship Company have also arranged to dispatch three mail packets each month to the Cape of Good Hope, instead of two, thus giving additional facilities for the growing commerce of the Cape and Natal Colonies. The outward service will commence in January. The dates of departure will be the 5th, 15th, and 25th of each month.

THE “GLENALVON.”—A CREW OF SKELETONS.—The schooner *Lancaster*, whilst bound to Sydney, Cape Breton, from Charlestown, Prince Edward’s Island, on the 18th of August, fell in with a dismasted vessel, which was apparently deserted. The master of the *Lancaster*, Captain Martin, with several of his crew, and Mr. Dugan, a passenger, boarded the wreck. Mr. Dugan gives the following account of what he and his companions saw on boarding the wreck:—“Splintered spars, entangled in canvas and rigging gear, and the planks of a boat torn asunder by the wind and sea, were scattered around in sad confusion. More dismal still were the scenes which further search brought to light. Below a heap of rigging, and broken by the weight of a spar which lay across it, were the bones of a human being—a skeleton. The skull and ribs had been crushed almost on a level with the deck. Shreds of canvas trousers and a guernsey frock were found among and near the bones. Further search revealed five other skeletons. A slight covering of crisped flesh remained on four of the skeletons, showing that they had died more recently than the other two. Many of the utensils of the galley were found, and Captain Martin made a strict search among them to assure himself whether there had been any food on board at the time of the death of these men. Not a single remaining pot or vessel of any nature in the cooking department of the ill-fated craft contained the least particle of food. This discovery seemed to satisfy the captain that all on board had perished from hunger, having failed, after months of eager expectation

and short allowance, to meet with any helping hand. The spectacle on board the dreary sepulchral hull was appalling. It was ascertained that the vessel had been rigged a brig. The hull bore no name on its stern-post. On the bowsprit the word *Glenalvon* was barely legible. In the fore-castle, which was almost filled with water, a most unearthly stench was discovered, and only two men could be found to enter and remain long enough inside to report what they had seen there. There were two corpses on the floor, and one stretched across a 'bunk.' These sad relics were removed on deck, and the nine bodies were arranged in line and covered in canvas by the captain's order. The wheelhouse had been carried away, and the fastenings of the rudder broken. This, as the captain remarked, was the work of some tremendous sea. The fore-mast had been cut away to save the vessel from foundering—one of the extremest emergencies in a hurricane at sea. The jibboom was gone, and the entire craft, as she then appeared, was the most complete wreck Captain Martin had seen or heard of in his nautical experience of nearly forty years. Entering the cabin a foul odour was discovered, but not intense enough to forbid a thorough investigation. Towards the end of the steps leading down to the cabin a fetid pool of water was seen, and the men had to wade through it in order to reach every portion of the cabin. Between a stationary table and a couch the head of a corpse protruded from a berth in the wall, and when brought on deck was found to be in a state of decay. A buttoned jacket of good material, blue pantaloons, a flannel shirt marked 'T. F.,' and one boot covered the corpse. The chronometer in the cabin pointed to half-past four o'clock, and on the stationary table was an open Bible turned downward, a revolver with two chambers loaded, and a bottle containing a piece of paper upon which was written—'Jesus, guide this to some helper. Merciful God, don't let us perish.' The words were detached, and a hiatus occurred between every two or three of them, which showed that the writer must have been either in the lowest stage of debility, or driven to madness by hunger. In the captain's state-room his corpse was found lying bent on the floor as though he had fallen from weakness, while struggling, with faint hope, to save himself and men. On his bed were scattered books, papers, &c., but one sheet attracted particular attention. It was dated—'Martinique, May 30, 1872. Dear Kate,—I will post this letter here to assure you of my well-being; but do not attempt to hazard an answer to this port, as you will not find me here a week hence. I have kept all my strong promises to you, in spite of a thousand bad advices from my comrades. I drink a little beer, but that is all. Your precious photograph is a little silent angel—at least, I think so; and I read your letters over a hundred and a hundred times again. You say in yours, dated from 16, Hope Street, Liverpool, that the old

man was altogether turned in my favour when he heard of my having passed the board. Now, mind you keep him so until I get home again, when everything will be comfortable and jolly. Write to Hal's address in St. John, New Brunswick; for, should it not reach me there, Hal at least will know where I am. Wishing you good health, cheerfulness, and good fortune, my own darling Kate, I am for ever your own Robert. ROBERT C. HART.—The ship's regular papers were not found open; but Captain Martin took in charge a neat writing-desk found in the captain's trunk, and locked. There was a slate on the table in the cabin, which table was covered by guards, such as are used at meals in stormy weather. The slate, intended for taking down the log in rough, contained only blurred figures and illegible writing. The captain's trunk contained numerous letters, which Captain Martin intends to give up to the authorities at Sydney. Towards three o'clock a dead calm prevailed, and the boat's company that went on board the dismal wreck rowed back to procure something to eat and drink. At seven p.m., the calm continuing, Captain Martin proposed to set out for the ill-fated vessel again, to perform the sorrowful services of a burial at sea. For coffins a quantity of old canvas was brought, and rude bags were quickly formed out of that material. At half-past eight o'clock, a long board was laid upon a sound portion of the bulwarks, and two bags, to which weights were tied, were laid down. A lamp was held by a sailor on each side of the temporary hearse, and after Captain Martin had read the usual service the plank was lifted upward, whereupon the coffins, bags, and skeletons slid into the sea. The ceremony over, the party put back again for the *Lancaster*. Captain Martin has procured every possible clue, all of which he will give to the authorities at Halifax or Sydney, so that the true history of the *Glenalvon* may be learned."

ANCIENT BILL OF LADING.—Some interest has recently been excited by the action taken by the London merchants, to alter the form of the Bill of Lading, a specimen of which was given in the last March number of the *Nautical Magazine*. Without discussing the merits of the proposed change, it may be interesting to point out the ancient nature of the document. Oliver, in his "Practical Manual of Shipping Law," states: "The Bill of Lading is the evidence of the goods having been shipped." If this be so, then the oldest known Bill of Lading is contained in the 10th chapter of 1st Kings, verse 11, where it is stated, in the account of the visit of the Queen of Sheba to King Solomon: "And the Navy of Hiram, that brought gold from Ophir, brought in from Ophir great plenty of almsg trees and precious stones." See also 2nd Chronicles, chapter 9th, where peacocks, apes, silver, and ivory form part of the Bill of Lading of the ships from Tarshish. Pope, in his "Journal of Trade," says this is the "oldest Bill of Lading on record." This would be about 980 B.C., or 2,852 years

ago. But Oliver also lays down the rule that "if there is no charter, then the Bill of Lading will be evidence of the contract, as well as the shipment of the goods." *Ceteris paribus*, we may, therefore, argue that, in the absence of the other document, the charter party would be the evidence of the cargo, or constitute a Bill of Lading itself. Justice Willes, in the case of *Chappel v. Comfort*, said: "The provisions of the charter-party are only binding as between the shipowner and the charterer, and if there is a Bill of Lading given by the master, which gets into the hands of an assignee for value, he is entitled to have the goods delivered to him upon his fulfilling the terms mentioned in the Bill of Lading, and he is not ordinarily bound to refer to the charter." Here it is assumed that in some cases there may be no Bill of Lading existent; and we know that, practically, it is so in some instances. In such cases the charter would be a presumptive proof of the "lading." Hadyn states that a charter-party is "the same species of deed or agreement, as the ancient chirograph. It is a covenant between merchants and masters of ships relating to the ship and cargo. It was first used in England in the reign of Henry the Third, about 1249." Ogilvie, in his "Comprehensive Dictionary," says the chirograph was, "anciently, a writing requiring a counterpart, and was engrossed twice on the same parchment, with a space between, in which was written the word *Chirographum*, through which the parchment was cut, and one part given to each party. It answer to what is now called a *charter-party*." These facts are a little curious, and may be interesting to maritime students.

STEAM LAUNCHES.—A trial of a steam launch, built for the Government of Costa Rica, by Messrs. Yarrow and Hedley, of Poplar, took place on Saturday, on the Thames. This little steamer is 48 feet in length, and the chief feature of its construction is that it is built in three entire sections, so as to enable it to be thoroughly tested under steam in this country, and afterwards divided into three separate pieces for shipment, each section being of such a size as to allow of its being lowered down a vessel's hatchway. At the joints there are double bulkheads, rendering each section buoyant in itself. This method of construction avoids the necessity of obtaining skilled labour to put the launch together and set to work on arrival at its destination, thereby rendering the introduction of these useful little steamers possible in many foreign parts otherwise impracticable. The launch in question maintained easily a speed of ten miles an hour on a consumption of half a hundredweight of coal.

CREW OF THE "JOHN L. DIMMOCK."—The following shows how the crew of this vessel were disposed of, and is a melancholy example of the demoralization of seamen, let us hope, of the lower class. Twenty-six signed at Liverpool; fourteen deserted; five never joined; six were discharged; one only remained, and that one was the master.

TURTON'S COMPENSATED SPRING SAFETY VALVE.—We illustrate below an arrangement of safety valve, designed and patented by Mr. Thomas Turton, the managing partner of the Liverpool Forge Company. The

FIG 1

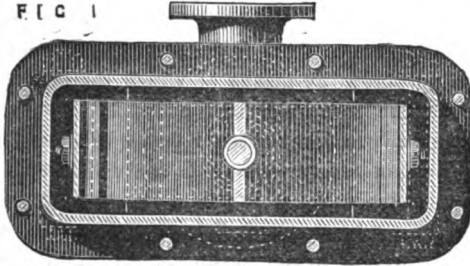


FIG 2

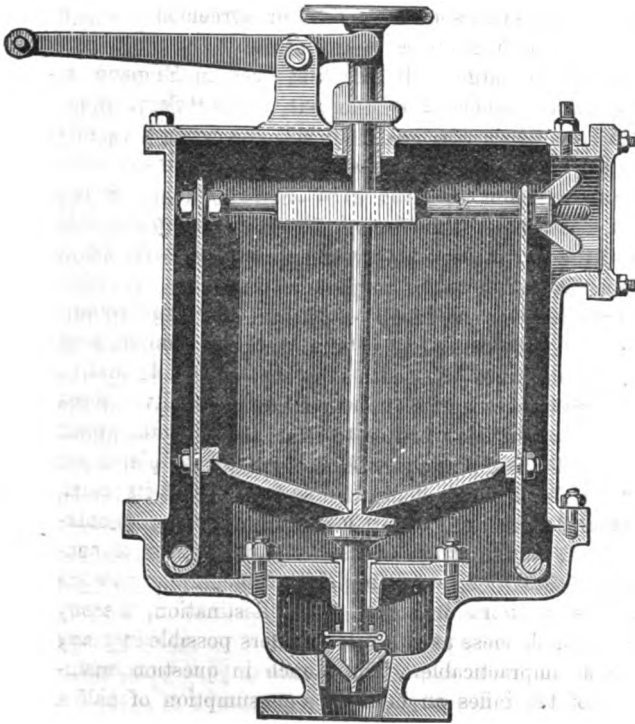
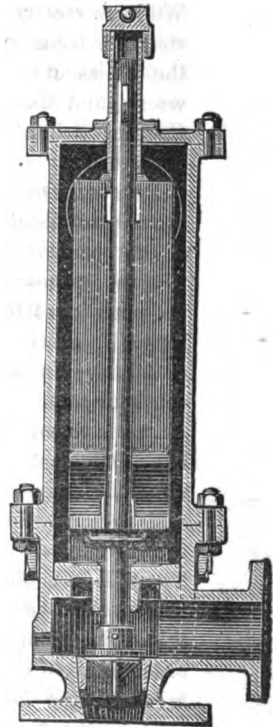


FIG 3



object of Mr. Turton's arrangement is to diminish the load on the valve as the latter rises, and thus to allow a greater amount of lift than is possible so long as this load remains constant. This object Mr. Turton accomplishes as follows: A spindle bearing on the valve is prolonged

upwards into a casing, and between a collar on the spindle, and a pair of single-plate springs contained in the casing, are disposed a pair of strut bars, as shown. These bars form a toggle joint, and as the valve rises, they assume a more nearly horizontal position, the effect being that the downward thrust they exert on the valve is diminished. The plate springs are hinged at the bottom to fixed fulera, and at the top they are connected by an adjusting screw, by means of which the pressure they exert can be regulated. The remainder of the details will be readily understood from the engraving. Mr. Turton has, we think, produced a very promising arrangement of safety valve, and one which, if properly proportioned, should act exceedingly well. The Board of Trade have sanctioned the fitting of this valve to the boilers of a large steamer, and we hope, in due course, to be able to report the result of their working.

TORBIÖRNSKICER.—CHRISTIANIA FIORD.—FIXED AND FLASHING LIGHT.—We have received a communication from Captain Nicholson, of the mail steamer, *Hero*, plying between Gottenburg and Hull, which states that the notice respecting these lights, dated the 6th September, 1872, is wrong, and that the notice published on the 16th July, 1872, is right. Captain Nicholson informs us that he has made this correction by actual observation.

PETROPALOVSKI AND THE BAY OF AVATCHA.—Captain Kock, of the *Bertha*, of Hamburg, has sent to the German Observatory a description of Petropalovski and the Bay of Avatcha, which appears in the *Hamburg Hansa*, and may be useful, as there are no pilots at that port. He fixes the position of the church tower as in $58^{\circ} 1' N.$ lat., and $158^{\circ} 48' 30''$ long. E. of Greenwich. The variation of the compass he gives as $4^{\circ} 30' E.$ In approaching from the south it is best to run along the coast for some fifteen or twenty nautical miles on the south side of the entrance to the bay. Then, if the weather be clear, the high mountains of Villenchinski and the Peak of Avatcha will be sighted, and will serve as good landmarks. Holding north along the coast, the Bay of Avatcha will presently be opened, disclosing on the east side of the passage the fire tower of Bluff, and on the west the rocks of Baboushka. There is a cabin and a signal-mast on the tower, and at night a fixed fire is supposed to be lighted, but this cannot be depended on. From this point a dangerous bank runs out for three miles to the S.E. In order to avoid it, and if one is not sure of being able to keep $2\frac{1}{2}$ or three miles off the land, the Bluff tower must not be allowed to cover the land to the N. of it. Within the Bluff there are three high pointed rocks, called the Three Brothers; aligning these with the tower, the line will pass exactly over the steep side of the bank. On the west side of the passage, some distance from the land, a few rocks show themselves; in order to avoid them, the Baboushka rocks should be kept on the

beacon to the N.E. of them. When the Bluff tower bears N.E. one can anchor anywhere, if it is foggy or the wind or tide is contrary. The Baboushka and Three Brothers rocks can be approached as close as desired, but the sea between them and the Pinnacle Point is not safe; however, as the rocks do not run far out, and there is always broken water on them, they are easily avoided. After passing the signal-mast on the W. shore, there are dangers on all sides. A bank runs out from this signal station for about three miles to the north; there are from two to $2\frac{1}{2}$ fathoms water on it. It is cleared by keeping the west part of the Baboushka rocks always covered by Stanitzki Point. A tolerably high scarped headland, Cape Rakoya, with a signal-mast and cabin on it, is presently sighted on the east shore. To the north of this headland there is a dangerous rocky shoal, with only four feet of water on it at low tide. In order to avoid it, the Three Brothers should be kept clear of Cape Rakoya, but it must be remembered that there is always a current setting on to the bank. When Petropaulovski bears E.N.E., the headland can be kept right on the town; and there is nothing more to fear, except a shoal which runs out to the S.E. of the peninsula which forms the port; and to avoid this, two prominent white monuments in the cemetery should be aligned. After doubling the little tongue of land which forms the inner port, anchor may be cast anywhere. On the whole, there is no real danger after passing the Bluff tower, because after that one can anchor everywhere, in from seven to twelve fathoms, and ride in safety in all winds. No ship stores can be obtained at Petropaulovski; and as there are only two lighters, one belonging to each of the two merchants, the work of unloading is very tedious.

THE TYNE AND WEAR.—We understand that the iron shipbuilding trade in this district is not very brisk at present, and that after the vessels now on hand are completed there are few more orders on the books of the principal firms. Great activity, however, is being displayed in the manufacture of chain cables, as after the 1st of next January, the increased tests to be enforced by the Board of Trade will come into operation. The *Dhoolia*, the largest vessel ever built on the Wear, constructed by Messrs. Oswald and Co., Pallion, Sunderland, for the Red Cross Line of Calcutta steamers, arrived in the Victoria Docks from the builders early last month, making a good passage in the teeth of a strong S.S.W. gale. The *Dhoolia* is 332 feet long between perpendiculars, 342 feet over all, 38 feet beam, and 25 feet 6 inches depth of hold. Her net register is 1,726 tons, gross register 3,500 tons, and dead weight capacity 4,000 tons. Her engines are on the compound, inverted cylinder, surface-condensing principle, of 350 horse-power, nominal, working up to 1,400 horse-power. She is fore and aft rigged, with three masts, can be steered either amidships or aft, and is fitted

with Gisborne's patent telegraph. With a view to the passage of the Suez Canal, she has been supplied with an auxiliary rudder, which can be fixed on the permanent one by means of a stern davit, which is also intended for laying out and getting in kedge anchors, if necessary, in the Canal. The passenger accommodation is most luxurious, punkahs, worked by the engines, electrical bells, &c., being provided. The *Dhoolia* is to be commanded by Capt. Alexander Boyd, late of the *Agra*, belonging to the same line. Messrs. Palmer and Co., of Jarrow-on-Tyne, last month, launched the *Monteno*, the longest vessel ever built on that river. She was built for Messrs. Guion and Co., of the Liverpool and Great Western Steam Navigation Company, and is 400 feet long, and 8,788 tons, builder's measurement. Accommodation is provided in her for 200 first class, 200 second class, and 1,000 third class passengers. A sister ship is being constructed in the same yard.

SOUTH AMERICAN TRADE.—It appears that the inhabitants of the United States are beginning to direct their attention to the South American trade. The *New York Herald* observes that so much importance has been attached to the development of commercial intercourse with Asia, that the value of a similar connection with South America, which lies much nearer, has been, in a great measure, overlooked. The Statistical Department of the Argentine Republic, which was established in 1870, states that the aggregate tonnage entered and cleared at the ports of that country in 1871 was 1,526,281 tons, of which four-fifths referred to Buenos Ayres, the rest being distributed among the minor ports. The coasting trade is not included in this return. There were altogether 4,088 sea-going vessels, of which 1,628 were steamers, 2,297 sailing ships, and 118 in ballast. The various nationalities are represented as follows:—

			Steam.		Sailing.
			Tons.		Tons.
English ...	...	...	821,084	...	201,779
Italian ...	...	...	159,836	...	99,975
French ...	...	...	77,496	...	98,848
Various ...	...	...	260,112	...	307,156
			-----		-----
			818,528		707,758

Recent accounts state that Baron Mana's new dry docks at Monte Video are nearly finished, and it is said that they will be the finest in the River Plate. The reports already published of the survey of the Amazon, now being carried on by the Brazilian Government, are attracting considerable attention in commercial circles.

LIGHTHOUSES ON SABLE ISLAND.—The old belief that under certain circumstances a lighthouse does more harm than good, appears to have

been the reason why one has never as yet been erected on Sable Island, which lies about 150 miles to the eastward of Nova Scotia. It was long alleged that the establishment of a light, on either or both ends of this island, would be more dangerous to vessels than its absence, on account of the sandbanks which run out from the land in various directions. But it is satisfactory to find that the Dominion Government, refusing to listen to this irrational view of the case, will, before long, display on Sable Island two lights, which, it is said, will be among the most powerful in the world—one a revolving white light, and the other fixed. The landing of materials on the sandbanks was a somewhat troublesome operation, and was rendered all the more so by the necessity for providing an artificial foundation of concrete and cement. Two very large fog-whistles are to be also erected, one in the vicinity of each light. The execution of this scheme is mainly due to the exertions of the Canadian Minister of Marine, the Hon. P. Mitchell, and his energetic deputy, Mr. Wm. Smith.

NEW DOCK ON THE TWEED.—The Berwick Harbour Commissioners have obtained Parliamentary powers to construct a new wet dock on the south side of the Tweed, below the old bridge. It will be 540 feet long, by 380 feet wide, the area being about $9\frac{1}{2}$ acres, which will afford accommodation to some 16 vessels of 400 tons, the largest usually entering the port. The depth of water on the sill will be 19 feet, and inside 20 feet. The total expense of the dock, and of some other works to be executed in connection with it, is estimated at £45,000; and the engineers are Messrs. Stevenson, of Edinburgh. The North Eastern Railway Company intend to form a siding and establish a coal dépôt on the spot, with the view of endeavouring to develop an export trade.

OUR OFFICIAL LOG.

MARKING OF PILOT VESSELS.—The Board of Trade, in pursuance of the powers vested in them by the provisions of the Merchant Shipping Act, 1871, have exempted pilot vessels from such of the provisions of Sec. 4 as require the name to be marked on the bows, and the name of the port of registry to be marked on the stern, and also from the provisions which require a scale of feet to be marked on the stem and stern.

INSPECTION OF LIGHTS.—We learn that in answer to an application sent to the Board of Trade, asking whether non-compliance with the regulations concerning lights and fog signals can be deemed to be unseaworthiness, that department have declined to answer the question;

but have stated that it is the Surveyor's duty, when it comes to his knowledge that a crew allege that the regulations are not complied with, to take steps for inspection under Section 80 of the Merchant Shipping Act, 1872.

CARGOES OF EMIGRANT SHIPS.—It is not necessary for the Emigration Officers, under the authority of 29th Section of the Passenger Acts, 1855, to object to the carriage as cargo in passenger ships of jute, hemp, flax, or other similar fibrous articles, provided they are clean, dry, and properly compressed and packed.

THE ALBERT MEDAL.—PARTICULARS OF SERVICES FOR WHICH THE RECENT GRANTS HAVE BEEN MADE.—The Queen has been graciously pleased to confer the decoration of the Albert Medal of the first class on each of the undermentioned gentlemen, viz. :—Mr. Augustus Raymond Margary, assistant in Her Majesty's Consular Service in China, and Mr. John Dodd, a British Merchant residing at Keelung, Formosa. The following is an account of the services in respect of which the decoration has been conferred :—During the raging of a very violent typhoon which burst over the north coast of Formosa, on August 9th, 1871, the schooner *Anne*, of Hong Kong, and the French barque *Adèle* were amongst the vessels blown from their anchorage, and driven on the rocky shore of Keelung Harbour. The night was very dark, with a blinding rain, and great quantities of wreck were floating in the water and being washed ashore in the surf; but, by the aid of a brilliant light of burning camphor, the position of the ships was made out from the shore. Mr. Augustus Raymond Margary, assistant in Her Majesty's Consular Service in China, and Mr. John Dodd, a British Merchant at Keelung, had a rope fastened to their bodies, and went into the surf with the view of aiding the crew of the schooner *Anne*, of Hong Kong, the nearest ship that could be discerned. Aiding each other, they waded and then swam a distance of some thirty or forty yards through the surf. The rope proved to be too short, and they were compelled either to throw it away or to return to the shore. They threw the rope off, and reached the ship by swimming. They then tried to reach the shore with a rope from the ship, and after making an unsuccessful effort to do this, they persuaded two volunteers to lower a small boat, which was done with great difficulty, in which Messrs. Margary and Dodd tried to row back with a rope. Their efforts were frustrated. The boat was turned completely over, and Mr. Margary was for a few moments, underneath it. They were, however, thrown on shore, with, fortunately, but few bruises. The ship was rocking violently from side to side when they left her, but seemed to sustain no damage, and by the advice of the captain, who appeared confident then of the strength of his ship, they desisted from further efforts, as there were more distressing cases calling for assistance further off. Timber was strewn

on the beach, and was beating amongst the rocks in such a way that little hope could be entertained of any living thing yet remaining; but an occasional wail of the sufferers in the sea induced Messrs Margary and Dodd to persevere for several hours. They then, with difficulty, effort, and danger, and in the dark, crawled over sandstone rocks of a peculiarly rugged nature, amidst breakers and wreck, until they arrived within a short distance of the remains of the French ship *Adèle*, and by swimming they were able to make a connection with her by a rope from the shore. Mr. Dodd swam to seize the buoy which the Frenchmen threw over, while Mr. Margary swam to meet him with the shore rope. They joined the two and immediately gained the deck, which was by this time shattered. With the aid of the rope the greater part of the crew passed safely to shore, when Mr. Dodd and Mr. Margary discovered the boatswain lying half under water, with his leg broken above the ankle. They raised him and carried him on shore by swimming. They then made repeated efforts to cross the broken back of the ship to save four men who remained cut off in the bows. These men were helplessly frightened, and could scarcely be got down. Messrs. Margary and Dodd in the end succeeded, but were both washed down by a heavy sea, which caused much injury to Mr. Dodd. The last thing which left the ship was a black cat, which clung to Mr. Margary's shoulder in spite of the heavy surf which was rolling over all, and when they left the ship she was actually breaking up beneath their feet.

EXTRA EXAMINATION OF MASTERS AND MATES. — NAVIGATION. — No candidate can make application to be examined for the grade of "Master Extra" unless he is previously in possession of a certificate as a "Master Ordinary." (Note.—The necessity of this regulation will at once appear upon considering that the ordinary certificate is the legal qualification, without which a Master Mariner is unable to follow his calling; and hence errors which would ensure the failure of an Extra Master, might appear to operate with some injustice in the case of the Master Ordinary.) The Extra Master is always required to go through the whole of the problems in the Master Ordinary's examination, but greater precision is required in the calculation and in the results than is expected from the ordinary master. Upon those problems being satisfactorily worked, and not before, those for the extra grade are issued, in both cases, in single half-sheets. Epitomes are not allowed to be used. Tables only are provided by the Board of Trade, and no other books are permitted in the examination room. In the calculation of the extra problems, the candidate is expected to show that he possesses superior qualifications. The problems being correctly worked, he is then examined "vivâ voce" in the following subjects:—The leading principles of the construction of the sextant: The several adjustments of the same: The

vernier—its construction and its uses: The construction of a Mercator's Chart: The principles of great circle sailing: The laws of storms in both hemispheres, and how to make use of them, or to avoid them. The candidate is then examined in the deviation of the compasses in iron ships, and is required to answer, in writing, the whole of the questions in Mr. Towson's Syllabus, on Circular No. 414, with certain problems resulting therefrom, to be given by the examiner and worked out by the candidate. This completes the examination in navigation of an Extra Master.

SEAMANSHIP.—An Extra Master is re-examined as to his proficiency in the rule of the road under both sail and steam, particularly by night, and, in addition to the other requirements of an Ordinary Master, he must show higher attainments in practical seamanship and mercantile matters. He is expected to be able to manage the affairs of his vessel in port without the aid of an agent, such as showing that he can form an estimate of the probable proceeds of a charter, and know whether it will prove a remunerative engagement; he must state how he would draw up a survey report and frame a set of bills of exchange, must understand how remittances are secured by shipping documents, and have a knowledge of general and particular averages; he must be able to mast his ship, heave her keel out, and detail all the necessary preparations; he is supposed to understand the meaning of such technical terms as camber, woodlock, and stopwater, and know how to detect a defective treenail, must know the usual way of arranging the different qualities of metal on a ship's bottom, and state in detail how he would act under critical circumstances with a large number of passengers on board, such as on springing a leak, abandonment, on a lee shore (loss of ship inevitable); what he would do for the preservation of life in fire, in a gale, &c., &c. He must *thoroughly* understand the use of the rocket apparatus for saving life. No set forms of questions are used at this port, but the questions are varied as much as possible.

BARROW-IN-FURNESS.—A SEPARATE PORT.—Barrow now enjoys the rights and privileges of an independent port. This step has been rendered necessary owing to the increasing commerce of the port, and particularly because of the foreign communication which has recently been established with Barrow.

PILLAU.—DEPTH OF WATER.—In consequence of the dredging which has been carried out with two steam dredging machines this year at the sea entrance into Pillau, the depth of water there has been brought up to 20 feet 3 inches Rhenish measure, by 7 feet 6 inches water gauge, and in a breadth of 130 feet. This dredged channel is in the beacon's line, exactly in the middle of the two piers. The course at present is S.E. to to E. $\frac{1}{4}$ in, and N.W. to W. $\frac{1}{4}$ out.

OFFICIAL APPOINTMENTS.—The Queen has been graciously pleased to appoint the Hon. Edward Robert Lytton, now Secretary to Her Majesty's Embassy at Vienna, to be Secretary to Her Majesty's Embassy at Paris; Francis Clare Ford, Esq., now Secretary to Her Majesty's Embassy at St. Petersburg, to be Secretary to Her Majesty's Embassy at Vienna; Sidney Locock, Esq., now Secretary to Her Majesty's Legation at the Hague, to be Secretary to Her Majesty's Embassy at Constantinople; Robert Percy French, Esq., now Secretary to Her Majesty's Legation at Madrid, to be Secretary to Her Majesty's Embassy at St. Petersburg; Henry Philip Fenton, Esq., now Secretary to Her Majesty's Legation at Athens, to be Secretary to Her Majesty's Legation at the Hague; Hugh Guion Macdonnell, Esq., now Secretary to Her Majesty's Legation at Buenos Ayres, to be Secretary to Her Majesty's Legation at Madrid; Frederick Robert St. John, Esq., now a Second Secretary in Her Majesty's Diplomatic Service, to be Secretary to Her Majesty's Legation at Buenos Ayres; Alexander Wilson Moir, Esq., and Sir Oliver Nugent, Bart., to be members of the Executive Council of the Leeward Islands; James Whittall, Esq., to be a member of the Legislative Council of the colony of Hong Kong; Charles Henry Major, Esq., to be a member of the Council of the Island of Grenada; Horace Rumbold, Esq., now Secretary to Her Majesty's Embassy at Constantinople, to be Her Majesty's Minister Resident and Consul-General to the Republic of Chile; Joseph Archer Crowe, Esq., now Her Majesty's Consul-General at Leipsic, to be Her Majesty's Consul-General for Westphalia and the Rhenish Provinces, to reside at Dusseldorf; Herr von Tauchnitz, the well-known publisher, is to be appointed British Consul-General at Leipsic; Mr. Jose Luiz Cardoso de Salles as Consul-General in London for His Majesty the Emperor of Brazil; Mr. Daniel K. Hobart as Consul at Windsor, Nova Scotia, for the United States of America; Mr. Carl Ludwig Sahl as Consul at Sydney for His Majesty the Emperor of Germany; also Mr. Eduardo Augusto de Carvalho as Consul at the Cape of Good Hope for His Majesty the King of Portugal and the Algarves.

NEW RUSSIAN FLAGS.—BOARD OF TRADE, OCT. 14, 1872.—The Board of Trade have received from the Russian Consul-General in London a printed copy of an order issued on the 6th March, 1871, to which are appended two coloured drawings of the new flags sanctioned by the Emperor of Russia for Russian quarantine vessels and revenue cruisers. These drawings can be seen at the office, Whitehall.

RUSSIAN SUGAR DUTIES.—The Board of Trade have received from the Secretary of State for Foreign Affairs a copy of a note addressed by the Russian Foreign Minister to Her Majesty's Ambassador at St. Petersburg, stating that foreign sugars which may be in bond at Russian ports

on 1-13th January, 1878, will be subject to the reduced scale of duties established by a decree of the 10-22nd June last, of which notice was given in the *London Gazette* of the 20th of August last.

SIERRA LEONE.—An Ordinance passed in 1827 has been abolished. It was entitled "An Act requiring all masters of ships and vessels to give security in the Secretary's office, and to provide against the fraudulent absconding of debtors, and by which the master of every vessel trading within the settlement of Sierra Leone should give security in the sum of £300; and that no person shall be carried therefrom aboard his vessel without being first furnished with a passport from the Colonial Secretary." It has also been determined to abolish, for the better encouragement of commerce and shipping, the wharfage dues, and to reduce considerably the tonnage dues now leviable. But any master neglecting to produce the certificate of registering correct manifest of cargo, will be liable to a penalty of £100, or six months' imprisonment.

SHIPPING AND MERCANTILE GAZETTE CORRESPONDENCE.

(Reprinted by special arrangement with Sir WILLIAM MITCHELL.)

WEIGHING COALS.—A shipmaster loaded a cargo of coals at Swansea or Southampton with no express condition in the charter-party for ship to pay for weighing. On arrival there, he asked the merchant if he was going to have the cargo weighed. He told him he was. When the shipmaster went to get the balance of freight he found merchant had stopped 1*l.* 10*s.* for weighing his goods. He asks whether he is compelled to pay the whole amount? The merchant said it was the custom of the port. In other ports the merchants pay one half and the ship the other.—The merchant cannot legally stop the weighing charges from the freight unless there is a stipulation to that effect in the charter-party. If, however, there is a general and invariable custom of the port for the ship to pay the whole of the weighing charges, the owner would be liable for them, and might be sued for recovery. The merchant must take to his cargo in accordance with the charter-party, and pay the full freight thereon on right and true delivery.

ENGINEERS' CERTIFICATE.—If a British steamer, whose engineers have no certificates, is lost while trading abroad, would the Underwriters on the hull be bound to pay equally as if they were certificated? The implied warranty in a policy of insurance was defined by Mr. Justice Lush, in the case of the Merchants' Trading Company, in 1870, reported in *Shipping and Mercantile Gazette*, to consist as follows:—"the assured undertakes in a voyage policy that his vessel shall start upon the voyage in all respects fit to encounter the ordinary perils incident to such a voyage." The Judicial Committee of the Privy Council

in "Jenkins v. Heycock" *Shipping and Mercantile Gazette*, June 14 1853), held that in the case of a time policy assuming there was an implied warranty on the ship leaving the first port, there could not be a fresh implied warranty at every intermediate stage expressed in the policy. If the ship had certificated engineers on leaving port at the commencement of the voyage, and the engineers on board at the time of the loss of the steamer were duly competent to perform their respective duties, the policy would not be voided. On the other hand, if the ship left this country without engaging the services of certificated engineers, or was in a colonial port where such engineers were to be had, and their employment is compulsory, the policy might be disputed. In the case of the *Tribune*, tried at the Court of Queen's Bench, Dublin, on the 16th February and 5th May, 1848, as reported in the *Shipping and Mercantile Gazette*, the underwriters were held not to be liable for the loss of a steamer which carried only one boat, instead of two, as a sea-going ship by Act of Parliament, on the ground that the voyage was illegal, her departure from port being prohibited by statute. On the same principle, a vessel which is bound by Act of Parliament to carry certificated engineers in and out of ports of the United Kingdom, or in the Colonies where laws in this respect have been enacted, and does not comply with such legal requirement, is illegally sailed.

COAL CARGO.—We charter a vessel to load in regular turn, and she is stemmed with coal shippers accordingly, and, being ready, notice is given at once. Our ship waits several days, and on inquiry we find that another vessel, which was not ready to load for at least a week after ours, is being loaded before her. We apply to shippers, and they say this ship was stemmed first, and (although they admit our ship was actually ready before her) she must be loaded first. Do you not think that our ship, being ready first, should have been loaded first, although the other vessel was actually in stem before her?—The vessel in turn on the stemming should be the first loaded; but if she is not ready, and any detention occurs thereby to the vessel next on turn, the charterer of the latter would be liable for demurrage.

RIVER OBSTRUCTION.—In towing down the River Tees, on the 1st inst., about 4 p.m., my vessel caught the dredger's moorings, on account of no one being in attendance on deck. This caused my rudder to be unshipped, and the vessel to go on the bank, and receive other damage. Which is the best way for me to recover the damage?—The Conservancy Commissioners would be liable if their dredger's moorings were in the fair way of navigation, and not efficiently buoyed, and the damages may be recovered by an action at law.

WRECK.—Is an anchor considered fixed to the soil when it is under water below low water mark?—An anchor not attached to a ship or

cable, when below low water mark, and not buoyed, is wreck, and, therefore, may be recovered by salvors, whose duty it is to place it with the receiver of wreck, being below low water mark, and does not belong to the lord of the manor. If unclaimed by the owner, the anchor being below low water mark, after the expiration of one year and a day, is the property of the Crown.

FAILURE OF VOYAGE.—A firm of merchants state that an Austrian ship is chartered to carry a cargo of ore from a port abroad to a direct port in Bristol Channel. After loading and putting to sea she is found to be leaky, but, instead of putting into the port of loading, put into a port 150 miles further away, lands the cargo, and calls a survey, which pronounces her to be unseaworthy to carry the ore. The captain refuses to deliver the cargo, or an advance of £100 which he had received, but takes in ballast and sails for a port in Austria, leaving the cargo in the hands of the Austrian Consul, with an intimation that arrangements might be made with him for the delivery, and asks what should be their remedy? The cargo is insured free of particular average. What is the position of the underwriters in reference to them?—Lord Mansfield held that—"By an implied warranty, every ship assured must be tight, staunch, and strong; but it is sufficient if she be so at the time of her sailing. She may cease to be so in twenty-four hours after her departure, and yet the underwriters will continue liable." Suppose, therefore, the ship was seaworthy at the time of leaving port, and sprung a leak from perils of the sea, the master would be justified in making for the nearest port. The master has the option then, within a reasonable time, to repair the vessel and proceed on the voyage, or to tranship the cargo by another vessel in order to earn the freight. Where a vessel puts into port to repair damages sustained by stress of weather, the expenses of discharging the cargo, in order to enable the repairs to be done, and reshipping it, give rise to a claim of general average.—(*Hall v. Janson*," Queen's Bench, January 24, 1855, reported in *Shipping and Mercantile Gazette*.) - But underwriters were not held liable for repairs of a ship in consequence of the vessel becoming strained and leaky after encountering only such weather as a ship reasonably sound, strong, and fit for the voyage would have encountered without injury.—("Fawcus v. Sarsfield," Queen's Bench, March 26, 1856, *vide* report in *Shipping and Mercantile Gazette*.) When a ship can be repaired so as to bring home her entire cargo at a cost which would exceed the value of the freight, but less than the value of the ship when repaired, there is not a total loss of ship or freight.—(*The Alfred*—"Moss v. Smith," Common Pleas, February 7, 1850, reported in *Shipping and Mercantile Gazette*.) A vessel sailed from Shields with a cargo of coals for Aden, but, after getting ashore, was taken into Cuxhaven, where

the coal was discharged, and, being found in a wet condition, the shipowner declined to reshipe them, on the ground that there was danger of spontaneous combustion, and that it would cost an unreasonable sum to put them into a safe state. The shipowner was held entitled to recover a total loss of freight from underwriters under a time policy, on the principle that what is applicable to ship and cargo holds also as to freight.—(“Michael v. Gillespie,” Common Pleas, May 23, 1857, reported in the *Shipping and Mercantile Gazette*.) If the ship, therefore, could not have been repaired at the port where she landed the cargo, the master would be justified in sailing away, and is not compelled to part with possession of the goods until the sum contributable by them for average is paid.—(“Simonds v. White.”)—The adjustment of contribution to general average must be made at the port where the voyage is broken up. (“Fletcher v. Alexander,” Common Pleas, April 30, 1868, reported in *Shipping and Mercantile Gazette*.) It was held, in “Roys v. Smith,” Sydney Supreme Court, reported in the *Shipping and Mercantile Gazette*, May 26, 1856, that an action of foreign attachment would not lie where the charter-party had been made at Sydney, but the breach, which formed the subject matter of the action, had occurred at Valparaiso, beyond the jurisdiction of the Court. According to the law in Austria, the shipowner would be entitled to *pro rata* freight for so much of the voyage as was performed, the cargo not having been lost; but, in the United Kingdom, an advance made on freight would be held as returnable, the ship being repairable, and the freight not having been earned.—(“Adamson v. Gill,” Vice-Chancellor’s Court, January 18, 1868, reported in the *Shipping and Mercantile Gazette*.) The clause, “free of particular average,” does not, however, exempt the Underwriter under the “suing and labour clause” from paying charges undertaken to prevent a total loss. In the event of a vessel being condemned, on account of sea damage, at an intermediate port, and the cargo is sent on by another vessel to its destination, the extra expenses of transshipment and forwarding are recoverable from Underwriters on freight, although the policy contains the clause “warranted free from particular average.” (“Kidstone v. The Empire Marine Insurance Company,” Common Pleas, May, 1866, and Exchequer, Feb. 6, 1867, reported in the *Shipping and Mercantile Gazette*.) If, therefore, the voyage was broken up from perils of the sea, and the freight was insured, the expense of forwarding the cargo would fall on the Underwriters. We would advise a claim being made for the cargo to the Austrian Consul; and, in the event of its non-restitution, an application might be made to the Tribunal of Commerce at the port where the cargo is stored, if one exists, under the bill of lading. This will raise the question of jurisdiction, and the legality or illegality of the master’s proceedings, and

serve to determine other points, such as whether the ship was seaworthy at the time she sailed, or could have been repaired if the the master had the credit, or there were ready facilities to do so.

LIABILITY FOR COLLISION.—What amount per ton is a steamer liable to pay in a collision case, and is such amount payable on the net or gross tonnage; also, can the crew space be deducted?—Section 54 of the Act of 1862 enacts, that where there is loss of life the liability extends to £15 per ton, and, in respect to loss or damage to ship or goods, to £8 per ton. In the case of sailing ships the register tonnage is to be reckonod, and in the case of steamships, “the gross tonnage, without deduction on account of engine-room.” As regards sailing vessels, the cabin or crew space is deducted from the gross tonnage, and the residue is called the gross register. In steamers also, the crew space is deducted in the same manner, and the Legislature evidently intended the liability to be restricted to the gross register of steamers. In the case of the *Normandy* (s.) the sum of £15 per register ton was paid into Court.—(Admiralty Court, July 12, 1870.)

MARITIME LAW.

CRUELTY TO SEAMEN.—The master and mate of the *Assyria*, of Newcastle, from Quebec to Greenock, were charged with having committed several gross acts of cruelty towards two of the crew during the voyage, such as striking, kicking, and knocking them down, and placing them in irons, and leaving them exposed to the weather. The defence was, that the crew were mutinous, and required severe treatment. The Sheriff, in summing up, said that there was nothing in the case to justify the conduct of the defendants, and that it was one of those cases which, he regretted to say, disgraced the British Mercantile Navy. The jury found the defendants guilty, but recommended them to leniency, under the peculiar circumstances. The Sheriff sentenced each of the defendants to three months' imprisonment.—Greenock Sheriff Court, Oct. 15.

FLOGGING ON SHIPBOARD.—A seaman, of the *Belted Will*, summoned the master of that vessel, for having, on several occasions, beaten him severely with a knotted rope, three inches thick, for alleged incompetency. The assaults having been proved, the Court observed that shipmasters were not justified in resorting to flogging for any offences committed by their men at sea, other than those which directly affected the maintenance of order and discipline on board—certainly not for incompetency or inability to perform the work they had engaged to do, for which the only remedy was the reduction of their wages. Altogether, of the assaults proved, three were of a more severe nature than the others, and for each of these the defendant would be fined 25 dollars, the costs, and

the prosecutor's maintenance in the Sailors' Home.—Shanghai Police Court, August 26.

MEDICAL FEE FOR EXAMINING CREW.—The master of the *Lina*, from St. Petersburg, a port supposed to be infected with cholera, having refused to pay a fee of one guinea to Dr. Cameron, the medical officer of the local authority of Macduff, for examining his crew, in accordance with sanitary regulations, issued last year, with regard to the importation of cholera into this country, Dr. Cameron raised an action against the master, on public grounds, to have the question of liability tried. The Sheriff gave a decree for the amount of the fee, with expenses.—Small Debts Court, Banff.

CARRYING PASSENGERS WITHOUT A CERTIFICATE.—The Portsmouth and Ryde Steam Packet Company were prosecuted, at the instance of the Board of Trade, for having, on the 24th September, allowed one of their steamers, the *Duke of Edinburgh*, to go to sea, with eighty passengers on board, without having one of the duplicates of a certificate, granted by the Board of Trade, and then in force, placed in some conspicuous part of the ship. It appeared that the *Duke of Edinburgh's* certificate had expired on the previous day, and that, pending its renewal, she had made an excursion to Ryde without one. The Court fined the company £5, with 8s. costs.—Portsmouth Police Court, Oct. 18.

HARBOURING A DESERTER.—Paul Popoo, boarding-house keeper, was arrested upon a warrant, by Mr. Evans, superintendent of the Mercantile Marine Police, for harbouring a deserter. It appeared that Charles Smith, a Maltese sailor, whilst boarding with Popoo, signed articles on the 18th September last, for the British ship *Dunbrody*, and received an advance note for £8 10s., which he gave to Popoo, who did not consider it sufficient. It was then arranged that Smith should also sign for the American ship *Imperial*, and receive the larger advance of £5 10s. This he did, and handed the note to Popoo, who only returned 10s. to him, and paid the American shipping fee of 10s. Smith joined the American vessel, and was arrested in the Penarth Roads, convicted of desertion, and committed for ten weeks. Upon the evidence of Smith, who was brought up as a witness under a judge's order, Popoo was convicted, and fined £20, or three months' imprisonment.

BOARD OF TRADE INQUIRIES AT HOME.

42. *May Queen* (s.s.), of London, stranded in West Hartlepool Bay, 20th September. Inquiry ordered 15th October, and held at Greenwich on the 23rd, 24th, and 25th October, before J. H. Patteson, Esq., stipendiary magistrate, with Captains White and Steele as nautical

assessors. Casualty caused through default of master. Certificate suspended for six months.

43. *Elizabeth*, of Shields, stranded on the Hasboro' Sand, 30th September. Inquiry ordered 15th October, but subsequently abandoned.

44. *R. W. Hodgson*, of South Shields, stranded on Taylor's Bank, 10th October. Inquiry ordered 25th October, and held at Liverpool, before T. S. Raffles, Esq., with Captains Harris and White as nautical assessors. Master exonerated. Vessel was stranded within the compulsory pilot ground, and while in charge of a first-class pilot.

45. *Regina*, of Liverpool, abandoned twelve or fifteen miles N.W. of Islay, 8th October. Inquiry ordered 25th October, and held at Liverpool, before T. S. Raffles, Esq., stipendiary magistrate, with Captains Harris and White as nautical assessors. Court could not find that the vessel was prematurely abandoned.

46. *Ariel*, of Shoreham, stranded on the South Calliper Sand, 2nd November. Inquiry ordered 12th November. Captains Harris and Hight, nautical assessors. Proceedings pending.

47. *Aldourie*, of Inverness, stranded on the Long Sand 1st November. Inquiry ordered 18th November. Proceedings pending.

48. *Mulgrave* (s.s.), of Newcastle, in collision with the *Launceston* (s.s.), of Sunderland, off Hartlepool, 16th October. Inquiry ordered 18th November. Captains Harris and Hight as nautical assessors. Proceedings pending.

49. *Lenora*, of Fleetwood, stranded on Castle Island, Skull Bay, 4th October. Inquiry ordered 15th November. Proceedings pending.

50. *Chebucto*, of London, stranded on Mixen shoal, off Mumbles Head, on the 9th November. Inquiry ordered 19th November. Proceedings pending.

INQUIRIES ABROAD.

92. *Sea Breeze*, of Auckland, stranded at Starbruck Island, 28th October, 1871. Inquiry held at Auckland, before H. S. McKellar, principal officer of Customs. Master in default. Casualty the result either of drunkenness, or from desire to show off the capabilities of his vessel.

93. *Hariette King*, of Sydney, stranded between Port Charles and Warkawan Bay, 4th July. Inquiry held at Auckland, before W. C. Daldy, Esq., and F. M. Dargaville, Esq., justice of peace. Casualty occurred through want of judgment of the master in taking his vessel close under the lee of the highland during a strong breeze.

94. *England*, of Liverpool, stranded off Alibaugh, 6th July. Inquiry held at Bombay, before J. Connor, Esq., senior magistrate, and Captain

F. W. Harvey, master mariner. Master in default, through standing into decreasing water during a thick fog. Certificate suspended for six months.

95. *Killarney* (s.s.), in collision with the *Kenyon*, in the harbour of Galle, 12th June. Inquiry held at Galle, before R. C. Winisford, Esq., receiver of wreck. Collision, the result of the *Killarney* not answering her helm.

96. *Great Australia* stranded near the Krishna Lighthouse, on the 15th July. Inquiry held at Rangoon, before F. Housman, Esq., recorder. Insufficient evidence that the casualty occurred through the default either of the master or second mate.

97. *Queen of India* lost sails, bulwarks, boats, &c., off Quoin Point, on the 30th August. Inquiry held at Port Elizabeth, before A. Wyld, Esq., resident magistrate, and F. Skead, Esq., nautical assessor. Master acquitted of all blame. Casualty, the result of stormy weather.

98. *Sunshine*, of Glasgow, stranded on the Flat Reef on the 12th August. Inquiry held at Hong Kong, before the Hon. C. May, police magistrate, H. G. Thomsett, R.N., harbour master, T. Pyke, Esq., unofficial justice of peace, and R. McMardo, master mariner. Casualty due to carelessness and want of skill on the part of the master. Certificate suspended for nine months.

99. *Grace Peile*, of Liverpool, stranded at Durban on the 28th July. Inquiry held at Durban, before H. J. Meller, Esq., resident magistrate, G. Rutherford, Esq., collector of Customs, and F. Airth, Esq., master mariner. Master exonerated. Vessel run on shore to save life and property.

100. *Princess Alice*, of Arbroath, stranded at Durban on the 31st July. Inquiry held at Durban, before H. J. Meller, Esq., resident magistrate, G. Rutherford, Esq., collector of Customs, and F. Airth, Esq., master mariner. Master and mate exonerated. Casualty arising through stress of weather.

101. *Trinculo*, of London, stranded off Natal, on the 31st July. Inquiry held at Durban, before H. J. Meller, Esq., resident magistrate, G. Rutherford, Esq., collector of Customs, and F. Airth, Esq., master mariner. Master exonerated. Mate censured for not having carried out the orders of the port captain.

102. *Sir Robert Hodgson*, of Fowey, stranded off Long Island, 27th August. Inquiry held at Smyrna, before R. W. Cumberbach, H.M. Consul, President, R. Barker, J. Scantlebury, and W. P. Hockin, master mariners. Master guilty of gross negligence and breach of discipline, whereby the vessel stranded. Severely reprimanded.

103. *Hydra*, of Dunedin, foundered twenty miles W. of Solander Island, on the 24th July. Inquiry held at Port Chalmers, before J. N.

Watt, Esq., justice of peace, T. Hill, Esq., assessor, and W. Thompson, master mariner. Master exonerated. Casualty the result of overlading in such an old ship.

104. *Clarence* (s.s.) stranded between Bald Hill and Rangaroo, on the 1st May. Inquiry held before the Sydney Marine Board. Master guilty of neglecting proper precautions. Certificate suspended for six months.

105. *Joliba*, of Lyttleton, stranded on the Dournd Rocks, Auckland, on the 15th July. Inquiry held at Auckland, before W. E. Daldy, Esq., and H. C. Balneaves, Esq., justice of peace. Master exonerated. Casualty occurred through want of judgment.

106. *Lahloo*, of Glasgow, stranded off the Island of Sandlewood, 30th July. Inquiry held at Sourabaya, before A. Hadaway, Esq., Acting Vice-Consul, President, P. Vader, Esq., surveyor, and Captains D. McLean, R. McKenzie, and J. Trenoweth, master mariners. Casualty occurred through a want of promptness on the part of the second mate in not putting down the helm. Master not to blame.

ROYAL NAVY AND ROYAL NAVAL RESERVE.

Abbreviations.—Ad, Admiral; A., Assistant; C., Captain; Cr., Commander; C., Chief; Cl., Clerk; Ch., 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.

PROMOTIONS.—Ad.—Sir Houston Stewart, G.C.B., 1851, Admiral of the Fleet; George Hancock, 1855. Cr.—Henry C. Aitchison, 1867.

APPOINTMENTS.—Ad.—Hon. Sir Henry Keppel, G.C.B., 1869, Commander-in-Chief at Devonport. C.—Algernon C. Heneage, 1866, to *Royal Adelaide*. Cr.—Arthur H. Alington, 1870, to *Valiant*; Henry F. Cleveland, 1868, to *Excellent*; Alfred G. Dale, 1870, to *Cruizer*; John F. L. P. Maclean, 1868, to *Challenger*. L.—Lord Charles W. D. Beresford, 1868, to *Royal Adelaide*, as Flag Lieutenant to Commander-in-Chief; John A. Home, 1872, to *Endymion*, additional; Charles Mason, 1868, to *Revenge*; Allan R. Woodriff, 1871, to *Ganges*; Pelham Aldrich, 1866, Arthur C. B. Bromley, 1869, and George R. Bethell, 1872, to *Challenger*; Francis H. Tabor, 1870, to *Cruizer*; William E. Black, 1871, to *Pembroke*; Frederick V. Isaac, 1871, to *Aurora*. N. L.—Joseph S. Vivian, 1866, to *Topaze*; William J. Symons, 1871, to *Cruizer*. S. L.—James F. Bedford, to *Shearwater*; Charles H. S. Pretymann, to *Doris*; Alan Howard, Reginald B. Fulford, Cecil F. Foley, and Lennard E. Dick, to *Cruizer*; John W. W. Wells, and Reginald R. Neeld, to *Lord Warden*; Walter H. B. Graham, to *Duke of Wellington*;

James W. Barder, to *Pembroke*, for disposal; Lord George G. Campbell, Henry C. Sloggett, Cecil F. Oldham, and Andrew F. Balfour, to *Challenger*; Henry J. G. S. Warleigh, Royal Naval Reserve. **N. S. L.**—James T. A. White, to *Decoy*; William H. P. Buckner, to *Mosquito*. **M.**—Henry W. Hennell, to *Narcissus*; John A. Ashworth, to *Endymion*; Frederic Slight, to *Swiftsure*. **C. E.**—Francis Martin, 1871, to *Asia*, for *Pearl*; Henry Cooper, 1864, to *Asia*, for torpedo service; William Holloway, 1872, to *Asia*, for *Enchantress*. **E.**—John Rice, 1869, and Henry G. Bourke, 1871, to *Mosquito*; Edward Agnew, 1862, and William Read, 1868, to *Decoy*. **2nd Class A. E.**—William H. C. Gale, 1871, to *Mosquito*; Samuel G. Follett, 1871, to *Decoy*. **D. I. G. H. F.**—William T. Domville, M.D., 1866, to be Honorary Surgeon to Her Majesty. **Sn.**—Alexander Crosbie, M.D., 1867, to *Challenger*. **A. Sn.**—George Maclean, M.A., M.B., 1862, to *Challenger*; Thomas Cann, M.D., 1860, to *Cruizer*; Alfred G. Delmege, M.D., 1869, to *Duke of Wellington*. **P.**—William B. Risk, 1864, to *Royal Adelaide*, *as Secretary to Commander-in-Chief*; Richard R. Richards, to *Challenger*; William P. Taylor, 1870, to *Cruizer*. **A. P.**—Edgar Radford, 1869, to *Narcissus*, as Secretary's clerk; Charles L. J. Underwood, 1865, to *Endymion*; Charles H. Farwell, 1867, to *St. Vincent*. **A. Cl.**—William Le Geyt Pullen, to *Narcissus*.

RETIREMENTS.—**Cr.**—Patrick J. Murray, 1869. **L.**—Frederick L. Partridge, 1872; Richard F. Meade, 1867; Frederick C. N. Hull, 1866; Wallace B. McHardy, 1865, as Commander; Alfred J. Booth, 1868; Henry A. Street, 1867, as Commander; Enwin H. S. Bray, 1868. **S. L.**—Charles R. Dawes, 1869; Alfred G. Waller, 1869. **N. L.**—Joseph H. Dutton, 1868.

DEATHS.—**Ad.**—George C. Blake, 1857, *r.* **C.**—William R. Dwarrris, 1864, *r.* **Cr.**—Richard Chambers, 1867, *r.*; Charles Garrett, 1864, *r.*; Alexander J. Smith, 1864, *r.*; Richard J. Jewers, 1861, *r.* **P. C.**—William Hamilton, 1861, *r.* **P.**—James S. Daniel, 1863, *r.*

MONTHLY ABSTRACT OF NAUTICAL NOTICES.

No.	PLACE.	SUBJECT.
206	MEDITERRANEAN—Italy—Naples	Alteration in Lights.
207	ADRIATIC—Cotrone	Establishment of a Harbour Light.
208	ADRIATIC—Gravosa—Daxa Rock	Establishment of a Light.
209	JAPAN—Inland Sea—Between Misimi Nada and Bingo Nada	Discovery of Sunken Rocks.
210	IRELAND—Shannon River—Scattery Island	Establishment of a Light.
211	ST. LAWRENCE RIVER—Saguenay River—Lark Islet	Establishment of Light.
212	ST. LAWRENCE GULF—New Brunswick—Shediac Bay	Establishment of a Light.
213	NOVA SCOTIA—S.E. Coast—Port L'Hebert	Establishment of a Light.
214	NOVA SCOTIA—S.E. Coast—Mahone Bay	Establishment of a Light.
215	NOVA SCOTIA—S.E. Coast—Rugged Island	Establishment of a Light.
216	NOVA SCOTIA—S.E. Coast—Negro Island	Establishment of a Light.
217	LAKE ERIE—Middle Island	Establishment of a Light.
218	LAKE ERIE—Pointe Pelée Island & Pelée Spit	Alteration in Lights.
219	UNITED STATES—New York—East River—Blackwell Island	Establishment of a Light.
220	KATTEGAT—Aarhuus Bay—Sletterhage point	Establishment of a Light.
221	KATTEGAT—Sealand—Spotsbjerg	Alteration in Light.
222	NETHERLANDS—Texel—Schulpe Gat	Establishment of leading Lights.
223	CHINA—FORMOSA Strait—Turnabout Island	Intended Establishment of a Light.
224	CHINA—Chusan Archipelago—West Volcano Island	Establishment of a Light.
225	ENGLAND—East Coast—Outer Dowsing Shoal	Buoy on north end
226	GULF OF BOTENIA—Finland—Ulko Kalla	Establishment of a Light.
227	CALIFORNIA—Pigeon Point	Establishment of a Light.
228	SPAIN—N.W. Coast—Coruna	Establishment of a Harbour Light.
229	ENGLAND—East Coast—Lynn and Boston Deepwater Docking and Woolpack shoals	Establishment of Buoys.
230	LAKE MICHIGAN—Milwaukee	Establishment of a Light.
231	UNITED STATES—Galveston Bay—Bolivar Point	Alteration in Light.
232	UNITED STATES—Massachusetts—Cape Cod—Wood End	Establishment of a Light.
233	CANADA—Gaspé—Sandy Beach Point Light	Alteration in Light.
234	IRELAND—Lough Larne—Larne Light	Alteration in Light.
235	ADRIATIC—Dalmatian Islands—Olipa Island	Establishment of a Light.
236	NEWFOUNDLAND—South Coast—Great Miquelore	Discovery of a Bank.

NAUTICAL NOTICES.

206.—MEDITERRANEAN.—NAPLES.—The fixed and flashing light on St. Vincent mole is moved to the extremity of the mole, and *flashes* shown every *thirty seconds* instead of every minute, and the temporary fixed red light at the extremity of the mole is discontinued. The green light at the extremity of St. Gennaro mole, of the mercantile port, is obscured in the direction of St. Vincent mole, terminating at the extremity of the new foundation of the mole, in order that the light may be visible to vessels passing the mole.

207.—ADRIATIC.—Cotrone.—A *white* light, suspended from an iron bracket fixed on a house, is now exhibited at the extremity of the Great mole at Cotrone. The light is 23 feet above the sea, and should be seen two miles.

208.—ADRIATIC.—Port Gravosa.—Daxa Rock.—A *fixed red* light elevated 51 feet above the sea is now exhibited on the rock, in clear weather it should be seen 5 miles. The light is exhibited from a pole near the keeper's dwelling. Position, lat. 42° 40' N., Long. 18° 8' E.

209.—JAPAN.—Inland Sea.—Channels Between Misimi Nada and Bingo Nada.—The following dangers have been discovered in the Aogi Seto channel and off the north-west coast of Sikok :—1. A rock northward of Kodono-sima ; it has 16 feet water on it at low water springs, and lies N.N.E. $\frac{1}{2}$ E., three cables from the rock to westward of Kodono-sima. Position, lat. 34° 16' 50" N., long. 132° 57' 40" E. 2. A rock (*Adji rock*) off north-west coast of Sikok, lying W. $\frac{3}{4}$ S. one and a half miles from Ka-sima and 8 cables from the nearest point of mainland of Sikok. Position, lat. 34° 4' N., long. 132° 51' E.

210.—IRELAND.—Shannon River.—Scattery Island.—A light of the fifth order is exhibited on the south end of the island. It is a *fixed white* light, with the exception of an arc showing *red* over the Rinana shoal between the bearings N.N.E. and N.E. by E. $\frac{1}{2}$ E. The white light is eclipsed landward between N.E. $\frac{3}{4}$ E. and N.W. by W. $\frac{1}{2}$ W. from the light. It is 50 feet above the sea, and should be seen 10 miles. The lighthouse is situated 100 yards from the extreme south point of the island, and 20 yards east of the Gun battery.

211.—ST. LAWRENCE RIVER.—Saguenay River.—Lark Islet.—A light is now exhibited in the centre of the islet. It is a *fixed white* light, 85 feet above high water, and should be seen 10 miles. Position, lat. 48° 8' N. long. 69° 39' W.

212.—ST. LAWRENCE GULF.—New Brunswick.—Shediac Bay.—A light is now exhibited on Cassies point. It is a *revolving white* light,

showing a light during *every alternate half minute*; it is 40 feet above high water, and should be seen 14 miles. Position, lat. $46^{\circ} 19' 15''$ N., long. $64^{\circ} 30' 20''$ W.

213.—NOVA SCOTIA.—*S.E. Coast.—Port L'Hebert.*—A light is now exhibited from a lighthouse recently erected at Shingle beach, east side of the port. The light is a *fixed red* light, 33 feet above high water, and should be seen 10 miles. Position, lat. $48^{\circ} 48' 40''$ N., long. $64^{\circ} 55' 24''$ W.

214.—NOVA SCOTIA.—*S.E. Coast.—Mahone Bay.*—A light is now exhibited on Hobson's Nose. It is a *fixed red* light, 68 feet above high water, and should be seen 11 miles. Position, lat. $44^{\circ} 24' 56''$ N., long. $64^{\circ} 18' 46''$ W.

215.—NOVA SCOTIA.—*S.E. Coast.—Rugged Island Harbour.*—A light is now exhibited on Carter island. It is a *fixed red* light, 66 feet above high water, and should be seen 11 miles. Position, lat. $48^{\circ} 42' 15''$ N., long. $65^{\circ} 6'$ W.

216.—NOVA SCOTIA.—*S.E. Coast.—Negro Island.*—A light is now exhibited on the north-east side of the island. It is a *revolving red and white* light, showing *alternate red and white flashes every minute*; it is elevated 48 feet above high water, and in clear weather should be seen from a distance of 12 miles. Position, lat. $48^{\circ} 30' 54''$ N., long. $64^{\circ} 21'$ W. The towers of the above six lights are 29 feet high, and painted white.

217.—LAKE ERIE.—*Middle Island.*—A light is now exhibited on the east end of the island, between Pointe Pelée island and Kelly island. The light is a *fixed red* light, 70 feet above the level of the lake, and should be seen 12 miles. The tower is a square wooden building, 49 feet high, painted white, and surrounded by trees.

218.—LAKE ERIE.—*Pointe Pelée Island and Pelée Spit Lights.*—The light on Pointe Pelée island has been changed, from a *fixed red* light to a *fixed white* light, and the light on the caisson at Pelée spit has been changed from a *fixed white* light to a *revolving white* light.

219.—UNITED STATES.—*New York.—East River.—Blackwell Island.*—A *fixed red* light of the fourth order is now exhibited on Blackwell point, north point of the island. It is 51 feet above high water.

220.—KATTEGAT.—*Aarhus Bay.—Sletterhage Point.*—A light is exhibited from the gable of a newly-erected building at Sletterhage point, South-west point of Helganes. The light is a *fixed white* light of the sixth order, 54 feet above the sea, and should be seen 11 miles. Position, lat. $56^{\circ} 5' 40''$ N., long. $10^{\circ} 31'$ E.

221.—KATTEGAT.—*Sealand.—Spotsbiery.*—The flashing light at the entrance of Ise fiord is altered from showing a flash every fifteen seconds to showing a flash *every thirty seconds*.

222.—NETHERLANDS.—*Teevel Island.*—Two lights of the fourth order

are now exhibited on the South-west coast of the island as leading lights for the northern part of the Schulpe Gat. They are visible through an arc between N.E. $\frac{1}{4}$ N. and E. by N. $\frac{3}{4}$ N. The northern light is on Schilbols nol, and the southern light on Stuidijk, S.W. $\frac{1}{4}$ W., $4\frac{3}{8}$ cables from the northern light. The northern light is 28 feet, and the southern light 21 feet, above high water, and both should be seen 8 miles.

Directions.—Vessels entering the Schulpe Gat should keep the leading lights of Kykdiun in line until the Falga light shows red, then steer a N.N.E. course, and when the leading lights on Texel island are in line N.E. $\frac{1}{4}$ E., keep them so, to pass midway over the inner bar, and when Wierhoofd light is seen, keep towards Texel roadstead.

223.—CHINA.—*Formosa Strait.*—*Turnabout Island.*—In March, 1878, a light of the first order will be exhibited on Turnabout island, off Haitan island, north part of Formosa strait. The light will be a *fixed white* light, elevated 235 feet above the sea, and in clear weather should be seen from a distance of 22 miles. The tower is round, will be 54 feet high, and painted black. Position, lat. $25^{\circ} 26' N.$, long. $119^{\circ} 58' 40' E.$

224.—CHINA.—*Chusan Archipelago.*—*West Volcano Island.*—A light of the fourth order is exhibited on the island. It is a *fixed white* light, 93 feet above the sea, and should be seen 15 miles. The tower is 33 feet high, and painted black. Position, lat. $30^{\circ} 18\frac{1}{2}' N.$, long. $121^{\circ} 55\frac{1}{2}' E.$

225.—ENGLAND.—*East Coast.*—*Outer Dowsing Shoal.*—A large conical buoy, painted in black and white horizontal bands, surmounted with staff and diamond, and marked *Outer Dowsing, North end*, has been placed on the North end of the Outer Dowsing Shoal in 6 fathoms water, about two cables westward of a patch of four fathoms, and N. $\frac{1}{4}$ W, $4\frac{1}{2}$ miles from Outer Dowsing light-vessel.

226.—GULF OF BOTHNIA.—*Finland Ulko Kalla.*—A light is now exhibited on the Ulko Kalla. It is a *fixed white* light of the fourth order, 58 feet above the sea, and should be seen 13 miles. The tower is round, and of a dark red colour. Position, lat. $64^{\circ} 20' N.$, long. $23^{\circ} 29' E.$

227.—CALIFORNIA.—*Pigeon Point.*—A light is exhibited on the point, North of Monterey bay. It is a *flashing white* of the first order, showing a flash every ten seconds, with eclipses between, elevated 150 feet above the sea, and should be seen 18 miles. The tower is 100 feet high, conical in form, and painted white. Position, lat. $37^{\circ} 10' 46'' N.$, long. $122^{\circ} 22' 40'' W.$ The fog signal is a steam whistle which sounds in blasts of four seconds duration, with intervals of seven seconds and forty-five seconds alternately.

228.—SPAIN.—*N.W. Coast.*—*Coruna.*—A harbour light is now exhibited from the extremity of the embarkation mole. It is a *fixed red* light, 23 feet above high water, and should be seen 6 miles. The light-house is a wooden octagonal building with an iron column in the centre

which supports the apparatus. From it San Antonio castle bears S.E. by E. and San Diego castle S. $\frac{1}{2}$ W. Position, lat. $48^{\circ} 22' N.$, long. $8^{\circ} 28' W.$

229.—ENGLAND.—*Lynn and Boston Deep's Entrance*.—The following new buoys have been placed on the Docking and Woolpack shoals at the entrance of the Lynn and Boston Deep's, viz. :

S.E. Docking.—A can buoy, chequered black and white, and marked *S.E. Docking*, has been moored in $4\frac{1}{2}$ fathoms at low water springs, with the following bearings:—

Cromer lighthouse - - -	S.E. $\frac{3}{4}$ S. $22\frac{1}{2}$ miles.
Blakeney Overfalls buoy - -	S.E. $\frac{1}{2}$ S. $9\frac{1}{10}$ miles.
South Races bank buoy - -	E. $\frac{1}{2}$ S. $5\frac{3}{10}$ miles.
Burnham Flats buoy - - -	N.W. by W. 6 miles.

These bearings place the buoy in lat. $53^{\circ} 7' 30'' N.$, long. $0^{\circ} 47' 30'' E.$

Woolpack.—A can buoy, chequered black and white, and marked *Woolpack*, has been placed two cables to the westward of the western spit of the Woolpack shoal in $5\frac{1}{2}$ fathoms, at low water springs, with the following marks and bearings:—

Hunstanton church in line with the
centre of the new church at St.

Edmunds - - - - S.S.W. $\frac{3}{4}$ W.

Holkham church - - - - S.E. $\frac{1}{4}$ S.

Well-light vessel - - - - W. $\frac{1}{4}$ N. $8\frac{1}{10}$ miles.

South Lynn Knock buoy - - - N.N.W. $\frac{3}{4}$ W. $8\frac{1}{10}$ miles.

These bearings place the buoy in lat. $53^{\circ} 5' 30'' N.$, long. $0^{\circ} 32' E.$

230.—LAKE MICHIGAN.—*Milwaukee*.—A fixed red light of the sixth order is exhibited from the outer end of the north pier of the harbour. It is 35 feet above the lake, and should be seen 12 miles.

231.—UNITED STATES.—*Galveston Bay*.—*Bolivar Point*.—A new light is exhibited from a tower recently erected about half a mile W.S.W. from the present lighthouse, and on the sight of the lighthouse which was formerly destroyed. The light is a fixed white light of the third order, elevated 117 feet above the sea, and should be seen 17 miles. The tower is built of iron, painted black and white in horizontal bands. Position, lat. $29^{\circ} 22' N.$, long. $94^{\circ} 45\frac{1}{2}' W.$

232.—UNITED STATES.—*Cape Cod*.—*Wood End*.—A red flashing light of the fifth order, and showing a flash every fifteen seconds, is now exhibited. It is 45 feet above the sea, and should be seen 11 miles. Approximate position, lat. $42^{\circ} 1' N.$, long. $70^{\circ} 11' W.$

233.—CANADA.—*Gaspe Harbour*.—*Sandy Beach Point Light Vessel*.—A fixed white light is now exhibited from this vessel in addition to the red light, the white light being 6 feet above the red one. The red light is also made more powerful.

234.—IRELAND.—*Lough Larne*.—*Larne Light*.—From the 17th December a sector of *red* light is now shown from the lighthouse, between the bearings S.W. by W. and W.S.W., in order to clear the reef extending from Barr point. The centre of this sector shows over the Hunter rock.

235.—ADRIATIC.—*Dalmatian Islands*.—*Olipa Island*.—A *fixed red* light is now exhibited 40 feet above the sea, on the eastern end of the island, entrance of Bocca Falsa. It should be seen 5 miles. Position, lat. $42^{\circ} 45\frac{1}{2}'$, long. $17^{\circ} 47' E$.

236.—NEWFOUNDLAND.—*South Coast*.—*Great Miquelore*.—A series of shoals have been discovered off the north-east end of this island. They lie N.E. $\frac{1}{4}$ N. and S.W. $\frac{1}{4}$ S., and are 3 miles in extent. The north-easternmost patch, with $1\frac{1}{2}$ fathoms on it, is in lat. $47^{\circ} 6' 30'' N.$, long. $56^{\circ} 10' 30'' W.$; the south-western end has $4\frac{1}{2}$ fathoms on it.

ERRATUM.—In Notice No. 203, page 991, for long. $24^{\circ} 4' E.$, read $24^{\circ} 34' E.$

CHARTS, ETC., PUBLISHED BY THE HYDROGRAPHIC OFFICE, ADMIRALTY
in November, 1872.

No.	Scale.		s.	d.
757	m = 2·3	Red Sea—Gulf of Suez	2	6
	d = 0·09	Wind and Current Chart for the Pacific, Atlantic, and Indian Oceans, coloured; with small Charts of Isotherms for Air and Water, and Isobars for each season	25	0
2640	d = 0·09	Pacific, Atlantic, and Indian Oceans, their Stream and Drift Currents	6	0

BOOKS RECEIVED.

“Dues and Charges on Shipping in Foreign Ports:” a manual of reference for the use of shipowners, shipbrokers, and shipmasters, compiled by G. D. Urquhart. Second edition, revised and augmented. Geo. Philip and Son, 32, Fleet Street, London, and Caxton Buildings, St. John Street, Liverpool. A valuable compilation, conscientiously executed, and completely carried through. Any shipowner or shipmaster in possession of this book is as well posted as to pilotage and other dues in foreign ports as the inhabitants themselves.

"Tables for Travellers," adapted to the pocket or sextant case. Compiled by Admiral Bethune, C.B., F.R.A., F.R.G.S. Blackwoods, Edinburgh and London. This very little book will in time find its way into every sextant case. By means of the book and a sextant, a watch and an artificial horizon, the traveller will possess means of determining his position as far as sun and stars are concerned. Messrs. Elliott, of the Strand, have fitted up, for the use of travellers, a neat and portable case containing the book and a sextant and other instruments. We are glad that the Admiral has published his labours.

"The Strength of Materials and Structures," by John Anderson, C.E., LL.D., F.R.S.E. Longmans, London. This is one of the text-books of science, adapted for the use of artisans and students in public and other schools. We will have it specially looked into by one of our professional staff.

"The Boys' Manual of Seamanship and Gunnery." Compiled for training ships, by Staff-Commander C. Burney, R.N., Superintendent of the Royal Naval School at Greenwich. London: Warne and Co. This book is the book of books for training ships. If it were accepted as a text-book by all the mercantile training ships, the present lamentable absence of concerted system would not exist. Not only every officer of a training ship, but every boy in the highest class ought to have a copy, and ought to take it with him when he goes to sea.

"The Spinsters of Blatchington," by Mar Travers. London: Henry S. King and Co. 1872. This pretty novellette, written by one of our own contributors, has reached us, and we are glad to go a little out of our way to notice it. We find before us a simple story told with grace and piquancy, quite free from the highly-flavoured sensational element which characterises many modern novels. The story is one of women's weaknesses brought into contact with men's follies, of misunderstandings, heartburnings, and reconciliations in regard to love matters, of nobleness and generosity, and of selfishness and ignorance in the ordinary affairs of life—all woven into a charmingly varied piece of work. We think a sailor would find some considerable enjoyment in reading the chronicles concerning the various spinsters, with some of whom, we venture to say, an impressionable Jack would undoubtedly fall in love, they are so charming. We congratulate our contributor on the success of the novel, as shown by the words "second edition" on the title page.

ANSWERS TO CORRESPONDENTS.

R. B. FORBES, Boston, U.S.N.—Your pamphlet, referred to in your letter on the rig of fore and aft vessels, has not come to hand.

SALVAGE IN THE WEST INDIES.—In answer to our correspondent, we think that in the case he puts there can be very little doubt that it is not a case of towage, but is a case of salvage. 1. The fact that B hoists signals of distress establishes this at least—viz., that B considered himself in danger, from which he desired A to come and rescue him—that is, to save him. It must be quite clear that B at least when he made his agreement with A, considered A as about to render him a service of salvage. That alone would settle the case. But we think also that it is equally clear from the accidents of the case that it was a salvage service, and the probability is, and the position of B shows, that she was in more or less serious danger when B signalled to A for help. Although the weather was fine, if B was disabled, from the damaged condition of her propelling power, all command of her was gone, and she was exposed to numerous forms of danger. She might be lying at the mercy of currents which might take her into fatal danger; and there was the risk of present danger in a sudden storm, and there are other dangers of navigation, such as collisions, before which—if she had to encounter them—she would be absolutely helpless. It might be safely said that a vessel that has lost her propelling power is always in danger, more or less imminent. We have used the words “propelling power” as covering both steam engines and sails. We take it for granted in this case—although it is not so stated—that B could not use her sails, probably because there was no wind. If we are correct, the service rendered by A, therefore, was clearly a salvage service; and the officers and crew are entitled to participate in the remuneration for it. We presume that the officers and crew and the owners of A have all agreed about the *lump sum* contracted for, as the proper remuneration for their services, and the only remaining question is that of distribution. With respect to distribution, no more difficult question could be raised. In cases in Court, distribution is absolutely in the discretion of the Court, and the proportions are always adapted to the actual circumstances of each case. In this case the statement sent does not mention that there is any *special* or individual service entitling either the vessel, or the master, or the mates, or any of the crew, to a particular distinction; and as A is a steam vessel, and certainly must have incurred various *commercial* risks, in consequence of her deviation from her voyage, she seems to be entitled to rather a more full remuneration than either officers or crew.

As a sort of general rule, it may be said that a steamer would have from one-third to one-half, about one-half when she was placed in great risk, and the officers and crew would have the balance distributed among them, more or less, in the proportion of their wages, with, perhaps, a little more to the master in consideration of his position and his responsibility. There are various cases that have dealt with this difficulty of apportionment:—*Himalaya*, Swabey, 515, the *Perle*, Swabey, 280, and a great number of others which, however, we are afraid will only serve to perplex our correspondent. We think, if he will take the rule as loosely stated in this memorandum, and apply it as he best can, and get the consent of the officers and crew to a distribution founded upon it, it will be the easiest and most equitable way of settling.—[We have gone into this case at length, because it will be of use at all times to any of our readers who may hereafter render salvage services.]

BARNACLE.—In July last we received a communication under the above signature on the subject of an alleged inequality in the sentences passed on mariners brought under Board of Trade inquiries, and calling in question the ability and fair dealing of the gentlemen who are called upon to lend their assistance in conducting such inquiries. We have not thought fit to publish our correspondent's letter, because we think that his strong and, we believe, sincere feelings made him impute motives to a class of gentlemen which we hope in his calmer moments he would retract. We would ask our friend to bear in mind that there are different degrees of culpability even in negligence, and that is sufficient to account in most cases for inequality between sentences inflicted on masters for apparently similar offences. *Nemo sapit omnibus hora*, and if official inquirers are sometimes lacking in wisdom, we think our correspondent may possibly have been in the same condition when he wrote so violently against them, especially considering that in the long run they perform their most important duties in a just and praiseworthy manner.

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